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THE UNIVERSITY OF ALBERTA
THE PROFITABILITY OF MERGERS AND ACQUISITIONS
IN CANADA

by



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A THESIS

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The undersigned certify that they have read,
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tion.

ABSTRACT

The purpose of this study is to empirically test the relative profitability of growth by internal and external means. An hypothesis is formulated based on an evaluation of internal and external growth within the theoretical framework of horizontal, vertical and conglomerate expansion.

From the Toronto Stock Exchange industrial list, 167 corporations appearing in the Financial Post Industrial Survey, the Financial Post Corporation Service Information Cards and the Financial Post Computer Services Library were selected. Each firm was investigated in the Industrial Survey and the Information Cards for acquisitions and mergers during the period 1957-68. The sample was partitioned into merging and non-merging groups and paired on the basis of size and industry. The parametric t test was used to compare the pairs of merging and non-merging firms on the basis of rate of return, competitive strength measures, efficiency measures, flexibility variables and stock market variables.

The conclusions supported the null hypothesis that generally profitability does not vary with the mode of growth. Merging firms experienced greater growth in

competitive strength but increased profit was not realized due to inefficiencies. Both groups utilized capital with the same effectiveness and capital structure was not significantly different. Merging firms did show a higher level of liquidity over the period. The finding that investors discount the earnings of merging firms at a higher price-earnings ratio than non-merging firms was a major result. Merging firms also exhibited a greater growth rate in equity capital.

A picture of acquisition valuation emerges wherein firms should value the earnings of acquired companies at lower discount rates than their pre-merger cost of capital. This would offset the optimistic price-earnings ratio of merging firms and still allow a net increase in share price after acquisition is consummated.

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CHAPTER I

INTRODUCTION

In the search for increased profitability business enterprises often combine with other companies. The trend towards combinations has accelerated through the 1960's reaching epidemic proportions in the United States. Consequently, in the last decade, greater attention is being paid to the important implications of these events.

Background

To understand the increased merger activity in Canada through the last decade it is necessary to examine the cultural, political and economic climate in which it flourishes. The United States has led the world in merger activity and its close economic ties with Canada have paved the way for the merger movement in this country. But combinations have evolved in a unique way in Canada. The close cultural and political ties with Britain and the proximity of the United States has caused a reaction in Canada against foreign takeovers of domestic industry.

Canada has experienced rapid growth over the last decade. The population has increased by almost 25

per cent while the Gross National Product has more than doubled.¹ However, the most dramatic development has been the accelerated rate of technological change. The resulting need for innovation, capital and markets forced enterprises to pool their resources. Thus the accelerated rate of change economically and technologically resulted in increased rates of mergers and acquisitions.

Objectives

In view of the increasing importance of acquisitions and mergers in Canada, this study was undertaken to cast light on the efficacy of growth by combination.

The objective of the study is to investigate the relative advantages and disadvantages of internal and external growth with respect to profitability.

The Approach to the Study

The objective was accomplished by documenting acquisitions and mergers among industrial firms listed on the Toronto Stock Exchange for the period 1957-68. On the basis of this investigation the firms were partitioned into merging and non-merging groups. A paired sample was assembled by matching merging and non-merging firms on the basis of industry and magnitude. The parametric t test was used to compare the profitability of the two

¹Source: Dominion Bureau of Statistics Daily, (November 21, 1969).

groups of firms on the basis of sixteen financial variables. These included measures of rate of return, competitive strength, efficiency, flexibility and several stock market variables.

Throughout the paper, the terms combination, acquisition and merger are used interchangeably.

Policy Implications

The study is designed to assist management in its strategic planning function. Knowledge of the relative profitability of the two growth alternatives should prove useful for this decision. At a time when mergers are fashionable in the business community, this study may aid managements in pursuing a logical rather than glamorous growth strategy.

The study may also be useful to investors in evaluating the shares of merging and non-merging corporations. It may also prove useful to economists. The comparison of profitability variables are useful indicators of the relative efficiency of resource use.

Limitations

Studies of merger activity in Canada have been rare in the past. Consequently, few sources of data are available. This was the main factor limiting the scope of the study.

Since the individual history of each company had to be investigated for merger activity for each of

the years from 1957 to 1968, extensive use was made of information compiled by the Financial Post. As a result the sample was limited to Toronto Stock Exchange industrial firms appearing in the Financial Post Industrial Survey and the Corporation Service Information Cards. Uniformity of financial data was ensured by relying only on the Financial Post Computer Services Library for this information. Each of the profitability variables was tested for normality to ensure validity of the t test.

CHAPTER II

REVIEW OF THE LITERATURE

Although much literature exists on the financial, strategic, accounting and legal aspects of combinations, there are few analytical studies relating to growth by merger. This chapter reviews the work in this area and establishes the place of the present study in this context. The chapter is laid out in four sections. The first evaluates early studies on the effectiveness of combinations and reviews the problems of methodology evident in these investigations. Recent studies are reviewed in the following section and a suitable methodology is discovered. The third section is devoted exclusively to a brief review of Canadian mergers and how they differ from the United States. The last section concludes the chapter by specifying the role of the present study in the general body of knowledge in this area.

Early Studies

As early as 1922, Arthur Stone Dewing¹ published a paper in which he attempted to analyze the success of

¹Arthur Stone Dewing, "A Statistical Test of the Success of Consolidations," Quarterly Journal of Economics, Vol. XXXVI, No. 1 (November, 1922), pp. 84-101.

the large trusts resulting from the first merger movement (1895-1905) in the United States. For a merger to be successful, Dewing proposed three criteria: (1) the profits of the combination should be greater than the sum of the profits of the component firms prior to the merger, (2) the profits after combination should be greater than or equal to the estimates of the promoters and, (3) the annual earnings for the first ten years of combination should show marked increases over earnings of the first year of combination. The results for the thirty-five horizontal mergers which Dewing studied were disappointing. In the first nine years following combination, the profits of the combination were found to be less than the sum of the profits of the individual firms prior to merger. Whereas profits were estimated to jump by 50 per cent they fell by 18 per cent.

Heavy criticism has fallen on this study because the data used were misleading.² However, it can also be criticized in terms of the methodology employed. Dewing was attempting to determine the success of combinations in terms of profitability. But the performance criteria chosen were not necessarily valid indicators of success. Theoretically a combination should meet the three criteria,

²Richards C. Osborn, "Efficiency and Profitability in Relation to Size, " Harvard Business Review, Vol. XXIX, No. 2 (March, 1951), pp. 82-94.

but external variables affect the performance as well. A loss of vitality in the economy would tend to lower the performance of all firms not just those which merged, so that it is the relative performance between merging and non-merging firms which is important. Indeed, Mead³ has pointed out that these consolidations came at the end of a period of rapid expansion when the economy was leveling off, and suggested that non-merging firms may have fared even worse. By tracing the performance records of the same firms through the period 1924-31, he found that their record was superior to the industry averages. This indicates that they were successful compared to other non-merging firms in the industry. In a more comprehensive study covering 300 mergers for the same period of 1895-1905, Livermore⁴ found that merging firms were surprisingly successful compared to average earnings of their industry.

These studies illustrate the importance of a valid standard for comparison. In analyzing the profitability of growth by merger, all opportunities for profit except the mode of growth must be held constant if the merger

³E. S. Mead, Corporation Finance (New York: Appleton-Century, 1933), pp. 474-80.

⁴Shaw Livermore, "The Success of Industrial Mergers," Quarterly Journal of Economics, Vol. L, No. 1 (November, 1936), pp. 68-96.

effect is to be isolated.

Other authors have conducted studies with similar methodology to the problem of evaluating the success of combinations. Some of them have investigated the relationship between profitability and the size of the corporation. It is found that the same problem of a valid basis for comparison has led to inconclusive results. Crum⁵ found that small firms have low rates of profit. His analysis was based on rates of return for corporations of various sizes covering several industries. Subsequently, Summers⁶ found that small firms had the highest rates of return. Epstein⁷ supported this conclusion. In all three studies there was no standard for comparison to show how large and small firms perform under identical conditions. Osborn,⁸ in a comprehensive study, found significant differences only in the stability of profits. This result was due to the fact that previous researchers had not considered the high failure rate of small business and used a biased sample of successful ones. This defect was

⁵W. L. Crum, Corporate Earning Power (Stanford: Stanford University Press, 1929), pp. 145-53.

⁶H. B. Summers, "A Comparison of the Rates of Earnings of Large-Scale and Small-Scale Industries," Quarterly Journal of Economics, Vol. XXXXVI, (May, 1932), pp. 465-79.

⁷Ralph C. Epstein, Industrial Profits in the United States (New York: NBER, 1934).

⁸Osborn, "Efficiency and Profitability."

remedied by Osborn.

Recent Studies

Michael Gort⁹ studied the impact of diversification on profitability and concluded that no systematic relation existed between the two. His conclusion was based partly upon the degree of diversification in U.S. industry.¹⁰ It was found that the rate of diversification had more than doubled from 1950 to 1954. His argument relative to profit was based wholly on theoretical considerations of advantages of diversification. These included economies of scale, use of idle resources, entrance into profitable industries, stabilized profits and growth. No empirical work was carried out to test the relation between diversification and profitability. Alberts¹¹ also theorized on the potential advantages of growth through combination, but again no empirical study was done.

Various other studies have appeared that were designed for comparison between firms with respect to one

⁹Michael Gort, "Diversification, Mergers and Profits," in The Corporate Merger, ed. by W. W. Alberts and J. E. Segall (University of Chicago Press, 1966), p. 31.

¹⁰Michael Gort, Diversification and Integration in American Industry (Princeton, N.J.: Princeton University Press, 1962).

¹¹William W. Alberts, "Profitability of Growth by Merger," in The Corporate Merger, ed. by W. W. Alberts and J. E. Segall (Chicago: Chicago University Press, 1966), p. 235.

variable while holding all others constant. Shapiro¹² compared the dividend policy of merging and non-merging corporations. A sample of 100 merging and 100 non-merging firms in general manufacturing industries was assembled. The sample of 200 firms represented the largest manufacturing corporations in the United States and covered a wide variety of products and markets. The mean dividend per share was computed for each group for each year from 1953 through 1963, and analysis of variance determined the significance of the differences for each year. The dividend payout of non-merging firms was found to be significantly greater than that for actively combining firms.

By using this research design, Shapiro was able to draw a contrast between the dividend policy of the two groups of firms. A modified approach was developed for the present study to delineate differences in profitability. This is described in Chapter V.

Studies of Canadian Mergers

Merger activity in the United States has been documented on essentially three levels. First, the financial newspapers have followed the important transactions.

¹²David L. Shapiro, "Conglomerate Mergers and Optimal Investment Policy," Journal of Financial and Quantitative Analysis (March, 1970), pp. 643-56.

Second, the academic and business journals have analyzed in depth some particular aspects of combinations. Thirdly, government agencies and scholars have undertaken comprehensive research projects to analyze the impact of mergers and acquisitions on individual companies and the economy as a whole. A by-product of this activity has been the detailed documentation of combinations.

Canadian merger activity has not enjoyed complete reporting. Aside from items appearing in financial newspapers, there has been a dearth of information. As far as combination policy is concerned, Canadians have generally been content to borrow from the U.S. However, there has been an awakening in the past two years sparked by a concern over foreign ownership and takeovers of domestic industry.

Three comprehensive empirical studies have appeared marking a new awareness of the need for analytical research in this area. Reuber and Roseman¹³ published a study in 1969 containing the most comprehensive analysis of business combinations in Canada. In the course of investigating the impact of foreign acquisition of Canadian firms on domestic industry, the study compiles a wide

¹³Grant L. Reuber and Frank Roseman, The Takeover of Canadian Firms, 1945-61: An Empirical Analysis, Economic Council of Canada (Ottawa: Queen's Printer, 1969).

variety of data. Also appearing in 1969 was the study by Martin, Laiken and Haslam.¹⁴ Although concerned only with the accounting aspect of acquisitions, the study was valuable to the present paper in selecting the sample group of firms as outlined later in chapter V. In 1970 the Ontario Securities Commission released a study investigating the problem of financial reporting and public disclosure, and proposed recommendations to guide the Ontario government in drafting new legislation.¹⁵

Summary

Most studies of combinations focus on the impact of this activity on the economy and the business community. In order to encourage optimal allocation of the resources, governments are concerned with preserving a competitive market.

The early studies reviewed in this chapter attempted to evaluate the economic efficiency of large versus small firms and whether merging was a desirable form of growth. Since efficiency is manifest as profit in a market economy, this measure was used as an indicator.

¹⁴Samuel A. Martin, Stanley N. Laiken, and Douglas F. Haslam, Business Combinations in the 60's: A Canadian Profile (Toronto: The Canadian Institute of Chartered Accountants and the School of Business Administration, University of Western Ontario, 1969).

¹⁵Report of the Committee of the Ontario Securities Commission on the Problems of Disclosure Raised for Investors by Business and Private Placements, H. E. Langford, chairman (Toronto: OSC, 1970).

It was pointed out that merger activity has another aspect in Canada. Lately, foreign ownership of domestic resources has emerged as the prime consideration because of the dependency of political and cultural issues on the economic policy. The rising urgency over foreign interests has caused Canadians to devote attention to this aspect of combinations while relying on the U.S. experience for anti-trust policy.

The business literature is replete with arguments for combination as a means of growth for the individual firm. Many authors have presented the case for acquisition in detail to guide management in planning growth strategy.¹⁶

The present study was designed to fill the voids caused by out of date evaluations of the performance of merging firms, and the lack of Canadian investigations of the combination phenomenon. Therefore, it evaluates the relative profitability of growth by merger among Canadian firms over the last decade. Although it does not deal explicitly with foreign ownership, it could shed light on the ability of domestic firms to prevent foreign takeovers by increasing competition in the

¹⁶John L. Harvey and Albert Newgarden, ed., Management Guides to Mergers and Acquisitions (New York: Wiley, 1969).

acquisition market. It is aimed at the micro level in planning growth strategy, but it is equally applicable for evaluating the impact of combinations on the economy where profitability is indicative of efficiency of resource use.

CHAPTER III

THE GROWTH OF THE FIRM

The purpose of this chapter is to provide a background for a more detailed analysis in the following chapter.

The first section defines some terms in the field of acquisitions and mergers. Next the motivation for growth is investigated. The last section points out the two avenues for implementing growth and suggests several reasons why one alternative might be preferred over the other. This analysis of comparing internal and external growth will be continued in chapter IV.

Definitions

There is no typical business combination because each is characterized by different strategies, accounting methods, legal considerations and financial implications. As a result any combination must be defined in terms of each of the above four areas.

Business combination is a specific legal term encompassing all situations where one economic unit gains effective control over the resources of another. The following terms are more loosely defined because they depend on legal judgement for interpretation. An acquisition

is a combination in which an "important" part of the ownership interests in the acquired firm are eliminated in the transaction. In most cases the selling firm loses its identity and is absorbed by the buyer. A merger, on the other hand, is a combination of two or more firms in which holders of "substantially" all of the ownership interests of the firms survive. If all parties lose their identities and the surviving entity continues under a new title, it is usually termed a statutory merger or consolidation. Some of the other factors influencing the classification of combinations include the relative size of the parties, continuity of management, the relationship between the industries of the firms, and the medium of exchange in the transaction.

From accounting perspective, one must distinguish between two types of combination, purchase and pooling of interests. The distinction between the two is based on the treatment of the difference between the price paid for the acquisition and book value, (or goodwill). A purchase transaction acknowledges goodwill in a separate account on the balance sheet of the surviving firm while pooling of interests ignores the difference. The pooling of interests technique has been heavily criticized for this shortcoming in financial reporting.¹

¹A. R. Wyatt, A Critical Study of Accounting for Business Combinations, Accounting Research Study No. 5 (New York: American Institute of Certified Public Accountants, 1963).

Strategic definitions indicate the scope and growth direction of a firm's business. This is best described in terms of the product-market mix.² That is, the products, technology and the customers specify a firm's strategic position and the direction of expansion.

Diversification is a general term referring to a departure from the current product-market position. The firm develops new products and markets simultaneously. Expansion is distinct from diversification in that it is characterized by the development of new products or new markets, but not both simultaneously.

Horizontal diversification involves the development of new products requiring new technology for sale to the same type of customers as the firm's current output but covering a larger segment of the market. Vertical integration is diversification achieved by a firm gaining control of its suppliers, customers or both. A business enterprise may pursue concentric diversification by either entering new market areas with its products or by developing new product technologies for present markets. The currently popular conglomerate diversification involves entering an industry with a completely different product-market mix. The markets are new as well as the products

²Igor Ansoff, Corporate Strategy (Toronto: McGraw-Hill, 1965).

and the technology by which they are produced.

The foregoing definitions outline the directions that corporate growth may take. It should be emphasized that nothing has been said about the method by which growth is achieved.

The Pursuit of Growth

The term growth company often conjures up exotic overtones to create an intoxicating atmosphere for management, employees and investors. Studies have shown that high growth rates go hand in hand with high profitability.³

Growth represents the dynamic process by which a business enterprise develops. The manifestations may vary from an increase in sales volume to an improvement in efficiency. Size itself is not a good indicator of growth because magnitude can be measured in many ways. It may be represented by sales volume, work force or capital. Furthermore, a firm may alter its size in several directions. Economic expansion implies an increase in resources in terms of purchasing power. Financial expansion entails the accumulation of monetary resources. On the other hand, physical expansion implies a build up of tangible assets.

The objectives of a firm are the result of motives

³ Joel Dean and Winfield Smith, "Relationships Between Profitability and Size," in The Corporate Merger, ed. by W. W. Alberts and J. E. Segall (Chicago: University of Chicago Press, 1966), p. 18.

of the individuals associated with it, primarily of management and shareholders. It is management's task to formulate goals that lead to benefits for the owners. While most authors agree that widely held firms are management controlled, the officers must nevertheless appease the shareholders in order to maintain their positions.

Investors are regarded as profit seekers. So, in order to satisfy the ownership interests, management must behave in a way which maximizes shareholder's return. These returns may take two forms; distribution of current earnings and capital appreciation. One or the other may be preferred by investors depending on the circumstances. Thus, shareholders force management to become profit seekers. Through this line of reasoning Ansoff and, Dean and Smith⁴ argue that profitability is the most important goal of the firm. Shareholders are also concerned over the security of their investment. They demand assurances of long term survival which forces management to plan ahead for profitable operation over the long term.

Managers are also interested in rewards. As they are divorced from ownership, the earnings do not accrue to them. McGuire, Chiu and Elbing⁵ have demonstrated that

⁴Ansoff, Corporate Strategy and, Dean and Smith, "The Relationships Between Profitability and Size."

⁵J. W. McGuire, J. S. Chiu and A. O. Elbing, "Executive Income, Sales and Profits," American Economic Review, LII (September, 1962), pp. 753-61.

executive salaries are more closely correlated to size than to profitability indicating that management can increase their rewards by building up the firm.

Now a picture begins to emerge as to why a firm would pursue growth. First, shareholders demand profits which may be increased through growth. Second, management's own rewards increase with the size of the firm. This tends to support growth objectives. Therefore, growth is not a goal in itself but merely a means of achieving objectives.

Ansoff⁶ explains the profit seeking goal in another way. A firm possesses three basic resources; physical, monetary and human. He argues that these resources are consumed over time and must be replaced continually at some cost to ensure operation in the future. Consequently, a firm must generate revenue to invest in replacement resources as the others are consumed.

Behavioral scientists⁷ argue that the corporate goal is the result of many interacting sub goals. However, the prime consideration of all parties associated with the firm must be its survival. Once this is guaranteed, attention can be turned to ancilliary objectives such as pro-

⁶Ansoff, Corporate Strategy, p. 4.

⁷R. M. Cyert and J. G. March, A Behavioral Theory of the Firm (Englewood Cliffs: Printice-Hall, 1963).

moting good public relations. Since all objectives are contingent on survival, the conclusion is inescapable that the ultimate goal must be long term returns. Opportunities open to individual firms vary widely and a firm should choose the most profitable ones. If the company siezes upon opportunities for expansion and diversification to achieve increased profits, then growth occurs. To be sure, shareholders have no preference for growth other than when it leads to profitability. Given the objectives, resources and opportunities, a firm may plan its growth direction ranging from simply an increase in efficiency to conglomerate diversification.

Growth by Combination

Growth may be implemented in different ways. Internal growth typically evolves from consistent profitable performance, reinvestment of earnings and outside financing. Another method is to acquire the products and markets of another company to achieve the same objective. This is external growth. A variety of arrangements, aside from ownership, exist for obtaining needed resources. These include leasing physical assets, contracting with other companies and, obtaining licenses and patents.

Since the opportunities and resources available for expansion are unique to each firm, it is difficult to generalize on incentives for a firm to prefer one form of growth over the other. The only reason for choosing one

mode is that it is expected to be more profitable in the long run. External growth is often thought to be more profitable than internal growth in certain circumstances because of several distinct advantages. These include speed, economy, reduced risk and necessity.⁸

Probably the single most important advantage is the speed with which external growth can be implemented. Additional plant, products or markets can be acquired far more quickly than they could be developed by a firm. Furthermore, the speed of acquisition implies that a firm receives immediate returns because the acquired company is already in operation. By contrast, a long development process is involved in setting up a new division and making it competitive through internal investment. Acquiring a firm which is already operational may also be more economical than a competitive battle for entry into new areas. Furthermore, a saving in terms of quick returns to release invested capital, costs of errors due to inexperience, and further partitioning of the market by a new competitor may all contribute to favoring external growth as the more desirable alternative. The reduced risk of acquiring an operating company to the more uncertain outcome of investment in internal growth may also be

⁸A. R. Wyatt and D. E. Kieso, Business Combinations: Planning and Action (Scranton: International, 1969), p. 15.

significant in choosing the external route. Firms also combine because no other reasonable alternative for growth exists. Certain resources such as patents, management skills and special facilities may not be available except through acquisition.

The four advantages outlined above represent the main reasons why acquisitions might be preferred but they are by no means exhaustive. Many authors have prepared elaborate lists of situations in which merger would be advantageous. Perhaps, the most representative is the list prepared by the Financial Executives Research Foundation. This is reproduced in Appendix A.

Most of the motives in the appendix represent economic rationale for combining. However, it must be acknowledged that personal motives exist on the part of management and owners. Generally, when long run corporate profit is not related to the objective for the acquisition, the reason may be assumed to be personal. Many of the motives for merger apply to internal growth as well. But some advantages of combination result directly from implications of the transaction and are not applicable to internal growth. It is well known that much of the modern merger activity is based upon the fact that an acquiring firm may beneficially increase its earnings per share by purchasing a firm with a lower price-earnings

ratio.⁹ The resulting increase in earnings per share raises the market price and reduces the discount rate.¹⁰ This sort of consideration has been a major force in the modern merger investment.¹¹

This chapter has briefly outlined the motivation for growth and the two modes of implementing it. In chapter IV, internal and external growth are compared in detail with respect to their ability to achieve the profitability objective.

⁹ Consider two firms S and B where B is the buyer and S is the seller. Firm B has earnings of \$20 million, 5 million shares outstanding, current earnings per share of \$4.00, market price of \$64.00 and price-earnings ratio of 16. Firm S has earnings of \$5 million, 2 million shares outstanding, earnings per share of \$2.50, market price of \$30.00 and price-earnings ratio of 12. If S agrees to an offer of \$35.00 per share payable in shares of B, B must issue 1,093,125 shares of stock to S's shareholders. The surviving entity then has earnings of \$25 million, 6,093,125 shares outstanding, price-earnings ratio of 14 and a new earnings per share of \$4.10.

¹⁰ See Fred Weston, "The Determination of Share Exchange Ratios in Mergers," in The Corporate Merger, ed. by W. W. Alberts and J. E. Segall (Chicago: University of Chicago Press, 1966).

¹¹ Gilbert Burck, "The Merger Movement Rides High," Fortune (February, 1969), p. 79; and R. C. Lancey and D. J. Smalter, "P/E Analysis in Acquisition Strategy," Harvard Business Review, (Nov.-Dec., 1966), p. 85.

CHAPTER IV

THE PROFITABILITY OF GROWTH

A major portion of the preceding chapter was devoted to outlining the rationale for growth by a firm. The important implication of the discussion was that one form of growth might prove more profitable than the other. The purpose of this chapter is to pursue this argument further and propose a hypothesis on the relative profitability of external and internal growth. This will be accomplished in three stages. First, profitability will be operationally defined. Second, each growth strategy; horizontal, vertical and conglomerate diversification, will be analyzed in detail for the relative advantages of internal investment versus combination with respect to profitability. Third, the conclusions of this analysis will be drawn together and a hypothesis formulated.

Profitability

Long run profit maximization has been argued to be the ultimate objective of the firm. For the analytical purposes of this study the concept of profitability must be elucidated and quantified.

Definition

A distinction must be made between profit (income) and profitability. The former is an historical accounting measure derived by subtracting expenses from revenues over some period. Profitability embodies the concept of return on resources. Maximum profit is attained when the firm operates at a point where marginal revenue is equal to marginal cost. In applying this static equilibrium model continuously over the short run, the implied assumption is that the resources employed in the firm can be adjusted at will to the exact amount needed to support the optimal level of sales under different supply and demand conditions. However, in reality this adjustment is not continuous in the short run and costs are associated with changes in the resource base. Consequently, the problem of a real firm is to make the available resources yield the greatest return rather than simple maximization of profit. In this sense, profitability is defined as the rate of return on resources. The introduction of the infinite time horizon of a going concern causes further divergence between income and rate of return. If one is concerned only with the current operations of a firm, maximization of profit and profitability are identical. Here the objective simplifies to optimizing the resource conversion process. However, if the time horizon is extended into the future, maximization of current profit

is not sufficient to guarantee profitable returns over the long term. Resource commitments must be made in the present to generate profits in the future. Only by planning resource utilization in terms of long term returns can continued profits be guaranteed.

Uncertainty of the future means that all alternative profitable opportunities and disastrous events cannot be foreseen. Consequently, a firm's ability to react quickly as events unfold will determine to a large degree its profitability over the long run.

Measurement

The prime objective of the firm is advanced if three sub-goals are pursued; competitive strength, efficiency and flexibility.¹ These three factors encompass all influences on the profitability of a firm.

Competitiveness is largely determined by the product-market position and the strengthening of this status by expansion and diversification. A firm is likely to be profitable if it is strong in relation to its markets. Similarly, a firm efficient in the resource conversion process should be more profitable than one which is not because the unit costs of production will be less. Efficiency depends upon many factors including management ability, labor skills and the equipment used. Flexibility

¹Ansoff, Corporate Strategy, p. 69.

implies that a firm is able to take advantage of profitable opportunities when they arise and escape unprofitable developments. Included in this category are acts of God and all events impinging on the firm over which it has no control. Although rate of return subsumes these proxy variables, they reinforce one another in measuring profitability at different levels within the firm.

This study is restricted to financial statements for measuring profitability so all measures must be cast in these terms. Competitive strength is enhanced by growth and diversification. But since it is difficult to quantify market scope and diversity of product lines, measures such as growth in sales and earnings are feasible indicators of competitiveness.

Efficiency of a firm depends upon optimal allocation of resources. A good indicator of efficiency is the unit cost of output which is reflected by the profit margin or return on sales. The turnover of capital indicates the efficiency of the monetary resources. Other factors such as management and labor skill are not amenable to quantification.

Diversification increases flexibility by reducing the dependence on any one particular aspect of the firm. Furthermore, it increases the scope of profitable opportunities open to a firm. Liquidity measures such as current ratio and debt-equity ratio also determine a firm's

ability to respond to events quickly.

Profitability can be viewed from the shareholders point of view as well. Translated into these terms, the ultimate objective of the firm becomes the long run maximization of shareholder wealth. The share valuation model is a useful method for evaluating investments under this approach.² The current and future anticipated earnings determine the share price through the discount rate derived by the market. Thus the criterion for profitable investments is that the market price of a firm's shares should be greater with the investment than without it, or the rate of return on the investment should exceed the prevailing cost of capital.

Profitability of Growth

The strategic growth alternatives open to expanding firms have already been described. The purpose of this section is to compare the profitability of internal investment and acquisition as a means of implementing growth. To this end the relative advantages and disadvantages of each with respect to profitability are evaluated on theoretical grounds. The analysis is based upon the share valuation model using the profitability criterion already established.

First, horizontal diversification is discussed from both the supply of resources and demand for output

²See Appendix B.

aspects of the firms. Next, vertical integration is evaluated. Third, conglomerate diversification is analyzed. Some effects of growth such as synergy and risk averaging are discussed in detail in this context but are also applicable to other growth strategies. The last section is devoted to a special class of acquisitions.

To avoid differences in profitability of the two modes of growth due to different transaction costs and tax treatment only one medium of exchange is permitted. For combinations it is assumed that all outstanding shares of the selling firm are acquired in exchange for shares of the buyer. And all internal growth is financed by issues of shares.

Horizontal Diversification

A firm can benefit from horizontal expansion through greater sales or reduced costs. Growth in response to increased demand may be profitable because of greater revenue, while economies of scale resulting from horizontal growth can reduce costs.

Increased Demand

As output is increased through internal investment, the return on investment in additional production capacity will usually exceed the current cost of capital. This is based on the assumption that the marginal revenue curve has a greater slope than the marginal cost curve. Given this condition, as long as the demand increment is

permanent, the firm will be investing at a rate of return greater than the cost of capital prior to expansion. The stream of total earnings will rise and the market price of the shares should be greater after expansion than before.

A distinction must be made between the case of externally induced increases in demand and increases which the firm itself creates through advertising and promotion. In the latter situation it is more likely that the marginal cost curve will be steeper than the marginal revenue curve. Thus, the rate of return on the total investment³ may be less than the cost of capital if marginal cost exceeds marginal revenue for the new level of output. If a firm were able to profitably increase demand by promotions, it would imply that it was previously producing below optimal output.

Horizontal expansion by merger may be effected to acquire markets, productive resources or both. But it is generally not possible for a firm to take advantage of exogenous increases in demand by purchasing the assets and markets of a competitor. For an industry to meet rising demand, the total stock of productive resources must be increased and combinations do not achieve this; they merely redistribute control of the existing resources.

³Promotion costs plus new capacity.

The resources of each firm are only adequate to produce for its share of the market. So acquiring a company only adds a new market and the resources to provide for it without creating new capacity to exploit the excess demand.

It may be possible for a firm to respond to an increase in demand by purchasing another firm for its resources, but it is often uneconomical. Assuming that there are many firms in the industry, one particular firm can meet the increased demand of its market share by purchasing another company to gain capacity. But, as before, the stock of industry resources remains constant. Even if a firm did choose to use this approach the cost of the acquisition would likely make the rate of return less than it would be for internal growth. An industry receiving a demand increment would be regarded as a growth area by investors, as would the individual companies. In determining the price at which they will sell, the shareholders would discount the future opportunities for increased earnings. As a result the value of the shares would rise and the purchase price would follow accordingly. Since all future earnings due to the demand increment have been discounted and included in the purchase price, the cost of the acquisition would have a rate of return just equal to the industry cost of capital. Or the cost would be greater than or equal to an internal investment program to achieve the same capacity.

Economies of Scale

This section considers the cost reducing aspect of horizontal growth. Unit cost of output is the best indicator of economies of scale.

Given that industry demand and the number of firms are held constant, the optimal output for the individual firm will occur where marginal revenue equals marginal cost or where the greatest difference exists between total revenue and total cost. At this level of output profit is maximized and the market price of the shares should be greater here than at any other point. It was seen in the previous section that it would be beneficial for a firm to increase its level of output if industry demand were to increase. This situation normally favored internal growth. The only way in which acquisition might be more economical is if by acquiring a competitor, a firm could produce a larger fraction of the industry output at a lower unit cost than its present output. This would be a synergistic effect. To be sure, unit costs may also be lowered by increasing production through internal expansion, but in this case the demand does not increase to absorb the extra output. Depending on the price of the acquisition, the buyer could merge, reduce unit costs and increase profitability. The market value of the combined entity would be greater than that of the firms existing separately. Furthermore, the combined firm could increase its demand even more by reducing

the selling price until a new optimal production level is achieved.

Financially this scheme is sound and viable. However, other considerations, particularly anti-trust action tends to restrict this sort of activity because of the inherent reduction in competition. Furthermore, economies resulting from new types of production equipment cannot, in general, be introduced by combination because merger does not change the assets in an industry but merely redistributes the ownership. Internal investment is required to introduce new equipment. Acquisition could produce economies because of more efficient equipment only if special conditions existed in the industry. If some firms are using nearly obsolete machines while others have updated to the most modern types, then the former could realize production economies by purchasing the latter. Also in competitive industries some firms find their assets not being fully utilized because of poor planning or a loss of market share. Economies could be expected from a combination in which these facilities were made productive.

Vertical Integration

Strict vertical integration by acquisition or internal investment does not produce increases in demand for a firm's products. If a firm does integrate vertically and increases demand for the new output by selling to

customers other than itself then it would more correctly be conglomerate diversification. But although no benefits can be derived from vertical integration because of increased demand, certain production economies can be realized. By eliminating an outside profit center the cost of resources to the firm would be reduced whether integration was accomplished by acquisition or internal growth. In determining the degree of vertical integration a firm should pursue, it must balance cost with revenue for optimal production. So the feasibility of vertical integration can only be evaluated for each particular case where the cost and investment data is available.

Conglomerate Diversification

Conglomerate growth offers essentially three potential advantages to the firm with respect to profitability. The first and most direct is to enter more profitable endeavors than the firm is currently pursuing. Secondly, the presence of synergy may reduce costs thereby raising profits. Third, diversification is an avenue for spreading business risk for stable profits.

Entry into Profitable Industries

A growth industry is defined as one in which the members have an average rate of return greater than their cost of capital. If the return is just equal to the cost of capital, the industry is dormant.

An industry that is profitable for its current

members should also be profitable for new firms provided certain conditions are met. If a firm enters a new industry by internal expansion, the management must be competent in the new area to avoid costly mistakes and to fully exploit the latent profitability. Dean and Smith emphasize that this is an important consideration because managerial ability is largely a result of experience.⁴ Also profitable industries tend to be magnetic in attracting other firms so that a problem of dilution of returns arises. Internal growth introduces new resources to the industry thus increasing production and competition while reducing returns to the individual firms. In this respect timing is important. If a firm can respond to the demand in a new industry quickly, it can take advantage of the returns before other entrants dilute the earnings by sharing industry profits.

Entry by combination, on the other hand, effectively overcomes the hazards of internal growth discussed above. First, by acquiring a firm competitive in the new industry, the corporation inherits competent personnel with valuable experience in the field. Secondly, merger does not add to the stock of resources of an industry. So increased competition does not dilute the returns. Furthermore, combination can be effected quickly so that

⁴Dean and Smith, "Relationships Between Profitability and Size," p. 13.

a firm can take advantage of the returns before other entrants add to the dilution through internal expansion. But one major disadvantage of this approach has the potential to negate all benefits. As pointed out above, the price demanded by ownership interests is determined by the market value of the shares which in turn reflect the current and future earnings. For a firm in a growth industry the earnings would be discounted at a low rate and the selling price would be correspondingly high. As long as no synergism is generated, the price would be such that the rate of return would equal the buyers cost of capital because the profitability has already been extracted by the shareholders of the selling firm in the price of their shares. So where the industry may be profitable by internal entry, it may be unprofitable for a firm entering by combination.

Synergy

The previous section found that merging into profitable industries could be self defeating unless synergy effects existed between the two parties.

Essentially two forms of synergy might exist; sales synergy resulting in an increase in demand for the products; or production synergy reducing the unit cost of output. If either of these situations existed then the combined firms could generate greater profits. In the same way, the presence of synergy would permit a firm

to enter an otherwise unprofitable industry by internal growth and realize an increase in profitability.

Sales synergy in conglomerate diversification can occur in several ways. If the original and new products are complementary in some way, such as purchased by the same customers, then economy to the purchaser might exist and demand would increase. For example a manufacturer of writing paper could advantageously diversify into pens and pencils because customers would likely find it more economical to purchase these two supplies from the same source. As a result the demand for paper and pencils together would increase. Strictly speaking this occurrence would imply concentric diversification but the distinction between conglomerate and concentric diversification is a fine one. Also, if either the buyer or the seller has achieved significant product differentiation such as a well established brand name, the new products could be marketed under the same brand for a resulting increase in demand. Sales synergy can be effected by both external and internal growth, although the latter is hampered by a time lag and carries somewhat greater risk.

Cost synergy is manifest in economies of scale and can arise under different circumstances. If the product lines for two industries are related by raw materials or production techniques, then economies of scale might

be realized by a firm producing for both industries. Similarly, if marketing and distribution channels are common for two industries, a firm in one of them can use its existing distribution facilities to sell products of the other industry. The degree of the benefits achieved by synergy depends upon the similarity in technology and markets.

Cost synergy is attainable by both internal and external expansion. For external growth, cost synergy can be achieved in another way to those outlined above. Consider two industries X and Y related by product technology. Industry X contains firms operating at output levels on the declining portion of their average cost curve.⁵ Industry Y has firms operating in regions where the average cost curve is constant or does not increase with output as rapidly as the curve for X decreases. Since a firm in X has no way of increasing its output to achieve lower unit costs, it can acquire a firm in Y. The capacity of X can be used to produce for industry Y at a lower unit cost than the firms in Y. In this way the total average unit cost for the combined entity is reduced as total output rises.

⁵This condition could exist because of several situations. (1) If a firm is new in the industry or, (2) if the industry is very competitive and expected demand increases are small so that the firms cannot move to optimal output levels and (3) the expansion of output and demand is blocked by too many competing firms or by anti-trust action.

On the other hand, if a firm has unused capacity because of unexpected decreases in demand, it can profitably enter a related industry by internal growth because the capacity already exists and is lying idle. Merger would leave the excess capacity idle unless sales synergy existed to increase the demand for output. An analogous situation arises where a firm's operations fluctuate leaving periodic excesses of capacity. If it entered a production related industry gains could be realized by internal growth where the periodic excesses were utilized. The ideal, of course, would occur if the new industry had an exactly complementary cyclical production schedule.

Cost synergy would exist if a rather unlikely condition arose in another industry. If a firm could diversify into an area offering decreasing costs rather than constant or rising costs, then gains could be realized. However, this is an unstable situation because all firms would converge on the industry and in a short time supply would exceed demand and the economies would disappear.

Diversification and Risk

Up to this point share price has been enhanced through growth by increasing the stream of earnings. Here growth is analyzed for its effect on the discount rate at which the market values the earnings as another approach to raising the share price. The basic premise is that the

discount rate has two components: the pure interest rate, and a premium for risk. Depending upon the uncertainty of the actual earnings in the future, the market adjusts the risk component of the discount rate for uncertainty. Risk is important in connection with diversification because of the interaction of the risk characteristics of existing operations with new projects. By accepting new projects, the overall risk complexion of the firm is modified and a new discount rate for total expected earnings is derived by the market. Whether diversification is initiated by internal or external means is unimportant at this stage of the discussion.

It is well known that the risk interaction of the returns between two investment proposals can be classified into three cases: complete independence of the returns, positively correlated returns and negatively correlated returns.⁶ Independent projects have the property that the uncertainty of any particular outcome for one project is the same regardless of the outcome of the other. A new investment is likely to have very small correlation of earnings with existing operations if the products are neither close substitutes or close complements. Also if they require different inputs and technology, and are not

⁶Harold Bierman and Seymour Smidt, The Capital Budgeting Decision (New York: MacMillan, 1966), Chapt. 15.

sensitive to the same economic and business cycle fluctuations the returns will be independent. If the market finds the endeavors independent in these respects it will conclude that the streams of earnings are similarly independent. When two independent investments are combined, it can be shown that the risk attached to the total earnings is pooled or averaged.⁷ This is the basic diversification effect.

The case of positively correlated returns may arise if the products are complementary, require the same inputs and technology and, respond to economic fluctuations in the same way. The dependency results in multiplying the risk instead of averaging. Thus, there is no advantage in diversifying under these conditions. Given perfect correlation, even if the new project were only slightly more uncertain than current investments, the overall risk of the firm would increase. As the correlation coefficient becomes smaller between the returns of current and new projects, the uncertainty of the new project can increase without raising the overall risk of the total returns. When the coefficient approaches zero the situation reverts to the case of independent projects.

The converse situation occurs for investments with negatively correlated returns. Negative correlation

⁷Ibid.

implies perfect substitution of products, different inputs, and opposite response to the business cycle. The pure case of perfect negative correlation is probably unrealistic. It would require that a rise in demand for one product must result in a decrease in demand for the other, such that, as the cost of one increases it is countered by a decrease in costs of the other. This condition is difficult to envisage. In these circumstances the effectiveness of diversification is enhanced and a relatively risk free stream of earnings is assured.

By choosing diversification alternatives relative to its present risk complexion, a firm can reduce its discount rate through the risk premium component. A decline in the discount rate of earnings implies an increase in market price of the shares for the same earnings. The means by which diversification is implemented is of no consequence in itself. However, the fact that acquisition can reduce the uncertainty of the outcome through management experience and by virtue of the operations already established, combination may be more attractive.

Although shareholders prefer less risk to more, other things being equal, there is no reason why firms should try to satisfy this preference by diversifying. Investors are concerned only with the collective risk of their own portfolios. It is far easier for investors to diversify their portfolio by holding many different securities than it is for a firm to adjust its risk to the

investor's preference. From this point of view there is no need for corporations to diversify to reduce business risk.

Since all investors diversify to obtain a portfolio consistent with their risk preferences, one would expect all share prices to reflect the riskiness of the shares when held in combination with others in a portfolio rather than the riskiness of the shares held alone. If it is true that share prices are determined by investor portfolio diversification, then corporate diversification is futile. This argument advanced by Sharpe,⁸ circumvents corporate diversification from the point of view of the investor.

Management may endeavor to diversify for reasons other than shareholder's preference. Survival of the business enterprise over the long term requires that business risk be maintained below a certain level. A high degree of business risk creates financial risk for the debtors of the firm because a decrease in earnings could lead to default on interest and principal payments. This would tend to raise the cost of capital. Also other considerations such as the size of the firm, capital structure and temperament of management would likely impose limits on the degree of risk a firm could tolerate.

⁸William F. Sharpe, "Capital Asset Prices: A Theory of Market Equilibrium Under Conditions of Risk," Journal of Finance, XIX (September, 1964), pp. 425-42.

Bargains

Firms may be valued as bargains by potential acquirers in special situations. Such circumstances result from distortions in the ideal world upon which the preceding arguments have been founded. In this section some of the consequences of market imperfections are evaluated for their impact on profitability of combinations.

Forecast Bargains

One of the assumptions of the share valuation model is that the market accurately forecasts the stream of earnings so that the share price equals the intrinsic value of the firm. By lifting this premise, the market may over or under estimate the earnings stream which is actually realized.

If investors currently underestimate the future earnings, the price of the shares will be less than the intrinsic value of the firm. Consequently, the shares could be acquired at a bargain price. The internal rate of return is the rate which discounts the actual earnings stream to a present value equal to the market price of the shares. So that if the market underestimates the earnings, the discount rate must be lower to yield the same share price. Hence the rate of return realized by the acquiring firm on the acquisition is greater than the selling firm's cost of capital. So if both firms have the same cost of capital, the rate of return is also greater than the acquiring firm's

cost of capital. In order for the bargain to be realized, the market must adjust for the error at some later date by revaluing the acquired firm upward. Thus mergers which generate no synergy can be profitable if the price of the acquisition is based upon a temporary under valuation by the market.

In order to exploit this effect, a firm must discover market forecast errors before they are corrected. Recognition of these errors imposes practical restrictions on this type of bargain, but market imperfections do exist.

Cost of Capital Bargains

Cost of capital bargains depend on the risk premium component of the discount rate and the way it changes with combination. The cost of capital can be greater for one firm than for another because of differences in the risk premium. An often cited example is that small firms have riskier earnings than large firms, other things being equal. Therefore, if a small firm is acquired by a relatively larger company, the risk perceived by the shareholders of the smaller firm would diminish and the discount rate on its earnings would be adjusted downward. As the market reduces the discount rate, the price paid for the acquisition becomes less than its intrinsic value after combination. So the transaction is a bargain.

Although the above explanation depends upon

reduced risk to lower the discount rate, a number of other influences could have the same effect. Potential synergy between the two firms, patents, research and financing sources could all have a similar influence on the discount rate. By creating investors' confidence and making the intrinsic value of the selling firm greater after combination, a bargain can be realized.

Management Bargains

Throughout this chapter it has been implied that all firms are well managed and that the best possible decisions are made under the given industry and economic conditions. But if a potential buyer feels that it could improve the earnings of another firm through better management, then the price of acquisition represents a bargain. In effect the acquirer pays a price based on a small earnings stream and realizes a larger one.

Management bargains exist in the economy. Small or closely held firms often reach a critical stage in development where the owner-manager is incapable of effectively managing the operations. The management team of a large corporation might guide the firm more effectively as a subsidiary where other benefits might accrue.

Taxation Bargains

The taxation of combinations varies with the way the transaction is effected. So far in this analysis the taxation and accounting methods have been assumed to be

uniform for all mergers. By varying the form of the transaction it is possible for taxes to be reduced and profitability enhanced.

Taxes are important to corporations and shareholders in essentially three respects: income, deductions and loss carry-overs. Although no capital gains tax exists in Canada at the present time, the imposition of one is imminent in the near future.⁹

Business combinations may be broadly classified as taxable or nontaxable depending upon whether the shareholders of the acquired firm realize an immediate gain through the transaction. If the medium of exchange is such that an instantaneous gain is realized it is termed taxable. Conversely, if the realization of the gain is postponed it is said to be nontaxable. A transaction consummated by cash payment is taxable because the shareholders receive an immediate capital gain. On the other hand, an exchange of shares is a nontaxable transaction because a gain is only realized when the shares are liquidated. The particular tax treatment accorded to a combination depends upon several factors such as the medium of exchange and whether the transaction is classified as a purchase or pooling of interests.¹⁰ Some

⁹E. J. Benson, Proposals for Tax Reform (Ottawa: Queen's Printer, 1969).

¹⁰Martin, Business Combinations in the 60's, p. 80.

general implications can be discussed without becoming too deeply entangled in taxation law.

It is possible for a combination to result in lower tax payments for the acquired firm than it would otherwise have to pay on the same earnings as an independent firm. This can occur in the case of a taxable purchase transaction wherein the depreciation base for the assets is raised above the current book value because their market value is thought to be greater. Due to larger deductions for depreciation less taxes are paid on the earnings in combination than would have to be paid otherwise. The tax saving increases the earnings above the stream of earnings the purchase price was based on. In other cases deductions are not allowed for tax purposes and must be amortized against after tax income. In a purchase transaction any excess payment above the allowed depreciation base is recorded as goodwill. If it is amortized against after tax earnings, the reported income is reduced as before, but there is no tax saving.

A similar effect occurs if the acquired firm has reported losses which may be carried forward and written off against taxable income for the combination. The reduction in taxes increases earnings for the combined firms. But since this ploy is often used, the purchase price of loss bearing firms is usually greater than their intrinsic value to reflect the savings which can be obtained by acquiring them. Large bargains are therefore rare unless

the seller is threatened with impending bankruptcy and forced to be acquired.

A favorable purchase price may be obtainable by offering the selling shareholders a form of payment which keeps their taxes to a minimum. Since they incur less tax liability, they would be willing to accept a lower price. Currently cash is a popular medium of exchange in Canada for this reason. If financing and transaction costs are included in the analysis, then equity is usually preferred over debt because debt interest is not tax deductible if the borrowed funds are used to purchase shares of another firm. Retained earnings are also preferred because no flotation costs are incurred as with equity and bond issues.

Summary

Firms willing to invest in projects offering returns greater than the cost of capital can generate increasing earnings over time. The discount rate would decrease and share prices would rise. Conversely, firms participating in investments with returns less than the cost of capital would experience a declining earnings trend.

A firm choosing to grow internally has the following potential sources of profitable investment.

- (1) Increase in demand for a firm's output will usually result in returns on investment greater than the cost of capital provided that the demand increment is induced externally and not through the promotional efforts

of the firm.

(2) Any form of synergy can be a potential source of profitable investments.

(3) In specific circumstances vertical integration can be profitable.

(4) Development of new production methods or technological discoveries can be profitable investments.

The opportunities for profitable growth by merger appear to depend largely upon the availability of a seller with the right characteristics. Given this, many of the following opportunities present themselves.

(1) The presence of any form of synergy can lead to profitable investments.

(2) The rapidity with which acquisition can be effected contributes to profitable growth.

(3) The acquisition of experienced management and an already operating company contributes to profitable growth.

(4) In specific circumstances vertical integration can be profitable.

(5) Acquisitions made at bargain prices in a variety of situations are profitable investments.

The main distinction between the advantages of growth by merger and internal investment is that the former depend upon unique opportunities for a particular firm while the latter are broad and universally applicable to

all firms.

Synergy can be profitably exploited by both modes although the greater speed of implementation through combination and management competence may make acquisition more favorable. In an age of technological advancement, internal growth is better suited to profit from new developments. Also internal growth is more favorable to profit from increased demand in a consumption oriented society. However, the availability of bargains could prove to be the most profitable growth alternative.

It was discussed earlier that generally firms could not enter more profitable industries by acquisition and retain any advantage. But if it enters through a bargain, then not all of the future profitability is discounted by the seller. When mergers can be effected at bargain prices, it is probably more profitable to enter an industry by combination rather than internally as the price will likely be less than the cost of reproducing the same facilities. Furthermore, output will be increased and economies of scale might occur so that earnings will rise. Even if economies of scale and synergy do not exist, the opportunity to purchase a stream of earnings at a bargain price represents a great advantage to this form of growth.

Neither mode appears to offer consistent and distinct advantages over the other and both are capable of

generating additional profits for a growing firm. In view of these conclusions based on a theoretical comparison of the two forms of growth the following hypothesis is proposed for empirical testing.

There is no systematic difference in the profitability of firms growing by internal investment as opposed to acquisition and merger.

This hypothesis is subjected to empirical testing in the following chapters and conclusions are drawn from a cross section of firms.

CHAPTER V

THE RESEARCH DESIGN

The data for this study has been drawn from Canadian corporations. As a result of the dearth of compiled information on merger activity in Canada, the available data largely determines the scope of the analysis.

This chapter is divided into three sections. The first section discusses the sources of information and defines the sample of firms considered for the investigation. The second section describes how the data were used to compare the profitability of merging and non-merging firms. Here the term combination is defined and the actual research sample is assembled. The third section outlines the statistical techniques used in the study.

Sources of the Data

The firms considered for the study are those listed on the Toronto Stock Exchange industrial list. There are several reasons for this. The industrials represent the largest segment of Canadian companies in terms of magnitude and numbers so they should be representative of

merger activity in Canada.¹ These firms also represent the largest number of shareholders and are therefore of interest to the greatest number of investors. Also, the Financial Post uses firms from this group for coverage in the Financial Post Corporation Service Information Cards and the Financial Post Computer Service Library.

Another important reason for selecting these firms was that Martin, Laiken and Haslam² had prepared a refined list of the industrial firms for their study investigating the problem of accounting for acquisitions. Of the 498 industrial firms listed on the Toronto Stock Exchange they eliminated several groups of firms for various reasons.³ Financial institutions are subject to accounting practices and government regulation different from other companies. Foreign firms on the Toronto Stock Exchange were not subject to Canadian law and accounting practices. A group of small firms were eliminated because they showed inadequate financial reporting. With these rejections the original list of 498 firms was reduced to 410.

¹Martin points out in Business Combinations in the 60's that the 410 industrial firms in his sample represent 23 per cent of the total assets of all taxable Canadian corporations.

²Martin, Laiken and Haslam, Business Combinations in the 60's.

³These include six banks, six insurance companies, twenty-five loan and trust companies, thirty foreign firms and twenty-one miscellaneous small companies.

The requirements of the present study necessitated further refinement. In order to avoid the problem of soliciting information that might be considered confidential, it was decided to limit the sample to those firms appearing in the Financial Post Industrial Survey, the Financial Post Corporation Service Information Cards and the Financial Post Computer Services Library. Since these compiled sources concentrate on the same group of firms, a sample of 167 corporations appearing on all three was drawn. These firms are listed in Appendix C.

Application of the Data

For the purposes of this study a business combination was defined to include the following:

- (1) the acquisition by one firm of another business either publicly or privately held,
- (2) the acquisition by one firm of subsidiaries and divisions of another company,
- (3) the acquisition by one firm of major assets of another,
- (4) the acquisition by one firm of more than 50 per cent of the voting shares of another corporation, and
- (5) the acquisition by one firm of less than 50 per cent of the voting shares of another if it was implied that effective control was obtained.

Each of the 167 eligible firms was searched in the Financial Post Industrial Survey for combinations, as defined above, for the period 1957 to 1968. For verification the same firms were subsequently investigated in the Financial Post Corporation Service Information Cards. This investigation determined that 136 firms initiated 469 combinations. The number of acquisitions and mergers distributed over time closely agrees with the trend found by Martin.⁴

Testing the Hypothesis

Measures of Profitability

In chapter IV the concept of profitability was defined. Subsequently the three major factors contributing to profitability were presented; competitive strength, efficiency and flexibility.⁵ This section presents the measures of rate of return, competitive strength, efficiency and flexibility used in the analysis.

The variables used in the statistical test were derived as shown below.

- (1) Rate of return on equity

$$\frac{\text{Net income for common equity after tax}}{\text{Common equity}} \times 100$$

where common equity consists of all share capital

⁴See Appendix D and Martin, Business Combinations in the 60's, p. 15.

⁵Ansoff, Corporate Strategy, p. 50.

and reserves (less intangibles) minus preferred stock capital. An average for the period was used for items (1) through (6).

- (2) Rate of return on assets

$$\frac{\text{Operating income}}{\text{Total assets}} \times 100.$$

- (3) Profit margin

$$\frac{\text{Operating income}}{\text{Sales}} \times 100.$$

- (4) Capital turnover

$$\frac{\text{Sales}}{\text{Common equity}} .$$

- (5) Growth rate in capital turnover for the period

$$\frac{\text{Sales}}{\text{Common shares}}$$

- (6) Debt-equity ratio

$$\frac{\text{Long term debt}}{\text{Common equity}} .$$

- (7) Growth rate in sales over the period.

- (8) Growth rate in operating income.

- (9) Growth rate in cash flows.

- (10) Growth rate of average share price over the period.

- (11) Growth in earnings (before depreciation and tax) per common share.

- (12) Growth rate in earnings (after tax) per common share.

- (13) Growth rate in common dividends per share.

- (14) Price-earnings ratio at the end of the period.

- (15) Growth rate in common equity capital.
- (16) Average current ratio over the period.

Items (1) and (2) are the overall measures of profitability. The efficiency of a firm is indicated by items (3) to (6). Profit margin represents production costs in relation to sales. Also capital turnover indicates the efficiency with which the invested capital is used to generate sales volume. The debt-equity ratio is useful to describe the capital structure. Items (7) to (10) are indicative of the competitiveness of a firm. Growth in sales and cash flow implies that the firm is effective in meeting competition. The profitability of the corporation from the investors point of view is evaluated by items (11) to (14). Investor returns include capital appreciation and dividends. The stock market is an overall evaluator of a company's performance so that share price is a fundamental indicator of the profitability of a firm.

The price-earnings ratio has been included to determine if investors prefer one form of growth over the other. The growth rate in equity capital measures the effectiveness of a firm in attracting equity financing when required. The current ratio is a liquidity measure which determines the ability of a firm to generate cash quickly.

The two groups of firms were compared on the basis

of each of the measures listed above. The mechanism by which this was accomplished is described in the following section.

Statistical test

The hypothesis put forward in chapter IV is that there is no systematic difference in profitability between the two modes of growth, internal and external. The statistical test is framed in terms of delineating differences in the mean profitability of the two classes of firms. The parametric t test was selected for this purpose.

Two feasible approaches exist for applying the test in this analysis. The first is to test the difference in the means of the two samples with respect to a given variable. The second approach provides greater precision. It consists of pairing the observations and testing the mean of the differences in the variable for all pairs. In this way the paired observations are treated as one sample. Because of the nature of the data the method of paired observations was selected. The reasons for this choice are outlined in the last section.

For a one sample t test essentially three conditions must be satisfied. First, the variables involved must be measured in an interval scale. Second, the population must be normally distributed. And third, the samples must be drawn randomly and independently from the populations.

The measures of profitability are quantified on an interval scale. The population was tested for normality using a Chi-square goodness of fit test and found to be satisfactory.⁶ The third condition was also satisfied because the samples were drawn independently and the randomization requirement was met.

A t test requires only slight modifications to cope with the problems of paired observations because the two independent samples can be regarded as one sample of pairs without loss of generality.⁷ If D_i represents the difference of the variable score between the members of the i^{th} pair and N is the number of pairs, then the mean of the differences is given by M below.

$$M = \frac{\sum_{i=1}^N D_i}{N}$$

The sample variance S^2 is given by:

$$S^2 = \frac{\sum_{i=1}^N (D_i^2)}{N} - M^2.$$

The estimated standard error of the mean is:

$$S_e = \frac{S}{\sqrt{N-1}}.$$

⁶Appendix E.

⁷William L. Hays, Statistics for Psychologists (New York: Holt, Rinehart and Winston, 1963), p. 322.

Then;
$$t = \frac{M - E(M)}{S_e} \quad \text{where,}$$

$E(M)$, the expected mean of the difference is zero.

The hypothesis may be stated as follows:

$$H_0 : u_d = 0$$

$$H_1 : u_d \neq 0$$

where, u_d denotes the mean of the differences for the paired sample. Since the alternate hypothesis is inexact, and no directional difference has been postulated, the generality of a two-tailed test is preferred.

Paired samples

Experimental units are grouped in pairs such that the variation within pairs is less than the variation between pairs so that the precision is sharpened by reducing the variance. Profitability as given by the rate of return is generally acknowledged to vary according to two universal characteristics of firms. Firstly, the opportunities for profit are circumscribed to some degree by the industry in which a firm operates. Consequently, companies in the same industries tend to have similar rates of return. Second, rate of return bears some relation to the magnitude of a corporation. The rate of return diminishes with an increase in size as an evidence of diseconomies of scale.⁸ Profitability of a firm depends upon

⁸Howard J. Sherman, Profits in the United States (Berkley: University of California Press, 1968).

many other factors as well but, product-market position and size of the firm emerge as two major influences on the rate of return common to all firms. Therefore, by pairing merging and non-merging corporations on the basis of industry and size, the variation of performance within pairs can be reduced.

This variance reducing effect can be stated mathematically. The variance of the differences between two sample means can be shown to be:

$$S_d^2 = S_{m1}^2 + S_{m2}^2 - 2\text{cov.}(m1, m2)^9$$

where, 1 and 2 are the samples and m1 and m2 are their means. For independent samples the covariance term is zero. But for matched pairs, the covariance assumes some positive value, depending on the strength of the pairing criteria. Therefore, S_d^2 is less for paired samples than for independent samples.

This approach can be contrasted with the technique employed by Shapiro¹⁰ as explained in chapter II. Since the 200 large manufacturing corporations represent a relatively homogeneous population with respect to dividend policy, no significant advantage could be gained by pairing the firms on the basis of factors influencing

⁹Hays, Statistics for Psychologists, p. 334.

¹⁰Shapiro, Conglomerate Mergers and Optimal Investment Policy.

dividends. As a result he used the standard test to determine the difference in the mean dividends of the two samples.

In the present study the two classes of firms were paired on the basis of industry and size in the following way. First, the population of 167 industrial firms were stratified according to industry and size.¹¹ From the investigation of merger activity these firms were partitioned into merging and non-merging groups. Random samples were drawn from the same stratum of each group and assembled in pairs. The relatively small number of aggressively combining firms was the limiting factor for the sample size.

Summary

The merger activity of each of the 167 industrial firms listed on the Toronto Stock Exchange was investigated in the Financial Post Industrial Survey and the Financial Post Corporation Service Information Cards for the period 1957-68. Pairs of firms were matched on the basis of industry and size. Each of the sixteen measures was applied to a random sample of paired corporations and the modified t statistic was computed. From the value of t , the significance of the difference between merging and non-merging

¹¹Similarities in size were based upon sales volume.

firms with respect to each variable was determined using a two-tail test. The results are discussed in the following chapter.

CHAPTER VI

ANALYSIS OF RESULTS

This chapter analyzes the differences in profitability between merging and non-merging corporations. The significance of the t statistic is determined for each of the sixteen variables presented in the previous chapter. The results of the test for each variable are discussed and the interactions between them are reconciled.

Observations

The sixteen profitability variables used in the statistical test were designed to measure the influence on profitability of different aspects of the firm. Rate of return is the overall indicator of performance and this variable subsumes the measures of competitive strength, efficiency and flexibility. Competitive strength indicates the success of a firm relative to its environment. Efficiency evaluates the effectiveness of internal operations. Measures of flexibility indicate the reaction time of a firm responding to uncertain events which influences profitability. Stock market variables were also included to measure the performance of a firm from the investors point of view.

The financial data used in quantifying each of the sixteen variables for each company was taken from the Financial Post Computer Services Library. To ensure validity of the parametric t test, the population was tested for normality with respect to each of the variables.

The null hypothesis tested is that there is no tendency for profitability to differ according to the mode of growth, internal or external. The alternate hypothesis is inexact and nondirectional stating that there is a tendency for profitability to vary with the mode of growth.

The values of t computed¹ for each of the sixteen variables for the paired samples of firms are presented in Table I. The table is arranged according to decreasing level of significance or increasing probability that there is a difference between the two groups of firms.

Analysis

The results of the statistical test are evaluated in the order of profitability measures beginning with rate of return. A special section on profitability from the shareholders point of view is included and the major findings are summarized

¹Equations for the statistical test were programmed and executed in APL on the IBM 360/67 System at the University of Alberta.

TABLE I
VALUES OF t AND LEVEL OF SIGNIFICANCE
FOR PROFITABILITY VARIABLES

Variable	Sample Size	Value of t^*	Level of Significance
Rate or return on equity	31	-.0454	.99
Rate of return on assets	31	-0.702	.99
Capital turnover	27	-.1801	.90
Growth rate of capital turnover	20	-.3315	.75
Growth rate of earnings per share after taxes	27	-.4378	.66
Growth rate of operating income	24	.6656	.55
Growth rate of average share price	25	.6873	.50
Growth rate of operating earnings per share	30	.6820	.50
Debt-equity ratio	29	-.7967	.45
Profit margin	23	1.0794	.31
Growth rate of sales	18	1.2025	.25
Growth rate of cash flow	21	1.1956	.25
Growth rate of dividends per share	27	1.5722	.13
Growth rate of common equity	29	1.5913	.12
Average current ratio	30	1.9986	.05
Price-Earnings ratio	30	3.2697	.001

* Positive values of t indicate merging firms are greater with respect to the variable.

Rate of Return

The statistical test strongly supports the null hypothesis that there is no tendency for profitability to vary with the mode of growth. This is evidenced by the complete insignificance of the *t* values for both the rate of return on equity and assets.

Several explanations can be advanced for this result. It appears that on the average unique advantages attributed to merger and acquisition were not realized among the sample of firms. Such factors as the rapidity with which growth can be implemented by acquisition and the reduced risk of acquiring an already operating company do not appear to be operating in the sample. It is also possible that these factors are negated by other influences. On the other hand, synergy, diversification and economies of scale can operate with or without merger. Several possibilities exist. Either the common factors are operating in both of the groups with equal effectiveness, or the merging group is deficient in some of the common advantages, but are compensated by some of the unique benefits of acquisition. Any combination of these influences which produces no difference in rate of return is a possible occurrence.

The theoretical advantages of internal and external growth postulated in chapter IV had different characteristics. Whereas internal growth could be profit-

able for a wide variety of firms in many different circumstances, the profitability of external growth was likely to depend upon the availability of a firm for acquisition with special characteristics. As a result the average gain through combination for a large number of firms is likely to be moderate. Whereas taken individually, the rapidity and reduced risk of acquisition as well as bargains may yield extensive gains in profitability to specific firms successful in acquiring an ideal mate. Conversely, advantages of growth common to both forms are more universally applicable and would therefore tend to dominate in a large cross section of corporations.

The time period over which the advantages of growth would be expected to manifest is an unknown factor. Generally, acquisition would be expected to generate synergy, reduce risk through diversification and provide economies of scale sooner than internal growth because of the rapidity with which it can be implemented. However, the advantage of speed with mergers can be affected by a failure to fully integrate the acquired units so that the benefits can be realized. This aspect will be discussed in the next section. If the profitability of the sample of firms used in this study were to be evaluated over the next decade, some future increases in return might be traceable to growth achieved in the 1957-68 period.

The rate of return comparison indicates that

profitability is generally independent of the mode of growth. Some insight into the reasons for this result can be obtained by examining the subordinate variables. This is carried out in the following sections.

Competitive Strength

The results indicate that a disparity exists in the market competitiveness of the two types of firms. Merging firms definitely show a greater ability to expand sales volume. Since conglomerate diversification is not widespread among Canadian corporations² it must have resulted from horizontal expansion.

Every horizontal acquisition reduces competition to some extent. And since gains in sales due to elimination of competition are restricted to external growth, this group should find it easier to increase sales volume. Horizontal expansion by internal growth implies that a market segment must be won from existing firms in a competitive battle. The advantage of merging firms in this respect is given further credence by the t value for growth of cash flows over the period.

An important observation is that increased sales and cash flow do not permeate to the profit level of the

²This became evident during the investigation of acquisition activity. Martin estimates that only 12 per cent of the combinations for the period 1960-68 were of the conglomerate type in Business Combinations in the 60's.

corporation. This is evidenced by the fact that the growth rate of operating income has increased at a lesser rate. Since operating income is derived by subtracting cost of goods sold from sales, merging firms appear to have experienced higher production costs. Inefficiencies in production could be attributable to many factors at the level of the individual firm. But for a cross section of merging corporations the most plausible explanation for the higher production costs is that the acquired units were not effectively integrated for optimal efficiency. Post merger integration emerges as one of the most important determinants of successful growth.³

The growth rate of operating income per share is slightly greater for merging firms while the growth rate of earnings per share after taxes is not as great for these firms. This indicates that inefficiencies have occurred at two levels for merging firms. Production inefficiencies were indicated by the difference in the growth rates of sales and operating income, but administrative inefficiencies show up in growth rates of operating income per share and earnings after tax per share.

A firm may also experience diseconomies of scale and negative synergy. This would more likely occur for external growth because the rapid transition period over

³Harvey and Newgarden, Management Guides to Acquisitions and Mergers, Chapter IV.

which expansion takes place can temporarily disguise detrimental interactions between the two parties. Consequently, the marginal cost curve of the combined firms may have become steeper. Effective planning and integration of acquisitions can reduce the slope of the marginal cost curve after combination or prevent unprofitable acquisitions.

Efficiency

The average profit margin over the period shows a bias in favor of merging firms. This contradicts the earlier finding that merging firms were inefficient in the production process. The most likely cause of this discrepancy is found in the nature of the distribution of profit margins for the sample of firms. Appendix E shows that the distribution is probably not normal invalidating the t test for this variable. In fact the distribution is skewed to the left, as might be expected. In competitive markets, firms constantly endeavor to improve the profit margin to maximize profits. But because of diminishing returns in improving efficiency an upper limit must exist. Many firms will come very close to this limit while others being less successful will exist on lower profits or drop out of the industry. This would cause the distribution to be skewed.

The only way the greater profit margin could be justified keeping in view the results of the previous

section is as follows. Sales exhibited a greater growth rate than operating income implying that the profit margin was declining over the period for merging firms. In order for the average magnitude of the profit margin to be higher for merging firms it must have been much greater at the beginning of the period. There is no apparent reason why this situation would have existed.

The average capital turnover is not significantly different for the two groups of firms. This implies that merging and non-merging firms are using equity capital with equal effectiveness in the conduct of their business. Furthermore, the growth rate of capital turnover is essentially the same and the average debt-equity ratios show no significant differences in the two groups. It was evident during the data gathering process that marked differences in the use of long term debt existed within both classes of firms. Consequently, in the present Canadian situation leverage appears to be a function of managerial preference rather than a necessary source of finance for expansion.

The results of the study indicate that there is no significant difference in the efficiency of the use of capital resources over the period. This detracts from the popular illusion that aggressive acquisition minded managements are able to manage capital more effectively.

Profitability for the Investor

The securities market is an overall evaluator of a firm's performance. Therefore, share price should be a good indicator of profitability.

The theory that investors value the shares of combining corporations at a higher price-earnings ratio is borne out by the empirical evidence. The value of t for this variable is significant at the 0.1 per cent level and is one of the dominant findings of the study.

Current market price reflects both current and expected future earnings, while the earnings multiple is determined on the basis of anticipated earnings only. The fact that the earnings multiple is greater for aggressively combining firms suggests that investors are generally very optimistic about the projected returns of these firms. This phenomenon could be the result of two influences. First, investors may believe that individual firms are acquiring perfect mates so that extensive gains unique to acquisition will accrue. Any of the factors discussed in the preceding chapter concerning the advantages of acquisition could appeal to the investor. Second, merger and diversification are in vogue. It appears that investors are enthusiastic about aggressively merging corporations because they are caught up in the intoxicating atmosphere surrounding the term growth company. Apparently the high performance of a relatively few corporations

growing by external means has caused the market to relax its logical economic analysis of each firm using this method for expansion.

An aggressive corporation can reduce the discount rate of its earnings if it publicizes the fact that it is embarking on external growth. This condition arises because of certain effects of the combination transaction. As discussed earlier, when a firm with a high price-earnings ratio acquires another with a lower ratio, the buyer receives an immediate increase in earnings per share. As earnings increase, investors will become more optimistic and discount the future earnings at an even lower rate. As a result the share price increases. This mechanism is often used as follows.⁴ First, a company endeavors to assume a glamour or growth image. The purpose of this tactic is to increase the price-earnings ratio and share price. Once the ratio is large, opportunities will exist to acquire firms with lower ratios at an advantageous share exchange ratio. Through a succession of acquisitions the earnings per share of the surviving firm are increased. The greater earnings may cause the price-earnings ratio to increase further causing the share price to rise.

The finding that the price-earnings ratio for merging firms was greater while the earnings per share

⁴Gilbert Burck, "The Merger Movement Rides High," Fortune (February, 1969), p. 79.

after tax was biased in favor of non-merging firms is not consistent. It appears that Canadian firms have not exploited this aspect of acquisition to the same extent as U.S. firms. It is possible that Canadian investors are more rational in their evaluation of combining firms having learned a lesson from the U.S. experience. It is also possible that Canadian firms tend to view acquisition as a logical growth alternative rather than combining to exploit a market imperfection.

The fact that share price growth shows a slight bias for merging firms agrees with the higher price-earnings ratio of these companies. A higher price-earnings ratio at the end of the period for merging firms implies that either share price increased at a greater rate or earnings per share increased at a lower rate for these firms. The results show that the growth rate of share price was slightly greater for the combining companies and also that growth in earnings per share after tax was slightly less for non-merging companies.

The absolute magnitude of share prices and earnings may influence the price-earnings ratio. No investigation of the relationship between the earnings multiple and the absolute magnitude of either price or earnings is known. But, heuristically, such a relationship could be postulated for the real world. It would be expected that more optimism on the part of investors would be

required to increase the price of a 100 dollar share by 10 per cent than to increase the price of a one dollar share by the same proportion. This effect can be rationalized on the basis of diversification and leverage at the level of the individual investor. Clearly, an investor with limited income and debt capacity can achieve more diversification with many low priced, than with a few high priced shares. The increased risk because of dependence on a few large investments would cause the market to discount the earnings of high priced shares at a higher rate. If merging firms had higher share prices than non-merging firms, then this effect would tend to reduce the price-earnings ratio of merging companies. The fact that merging firms are able to maintain superior price-earnings ratios in spite of the above effect is an indication of the strength of investors' confidence. Institutional investors, who account for much of the stock market volume, will probably not be affected in this way.

The results show that merging firms have a tendency to increase dividend payments at a greater rate over the period. This is not directly contrary to Shapiro's⁵ findings that large U.S. manufacturing corpor-

⁵Shapiro, "Conglomerate Mergers and Optimal Investment Policy."

ations show an inverse relation between dividend payout and merger activity as his study was concerned with the magnitude of the dividends while this investigation compared only the growth rate of dividends.

Several reasons exist to explain why merging firms might pay greater dividends. Since combination offers greater opportunity for diversification, more stable profits could accrue to merging firms. With less fluctuation in earnings, a smaller reserve of liquid assets is required and a large portion of the earnings can be paid out. Furthermore, growth can be achieved rapidly by acquisition. Once the firm matures and the pressure to grow subsides, the firm will have excess funds available to pay out as dividends.

The payment of dividends could also be influenced by the way in which acquisitions and internal investment are financed. Since capital gains are not taxable in Canada at present one would expect shareholders to prefer cash as payment. However, most acquisitions in Canada are accounted for by an exchange of shares.⁶ This could indicate that the firms find it more economical to issue shares than to raise cash. Clearly, it is cheaper in terms of the flotation costs to issue shares directly

⁶Martin points out in Business Combinations in the 60's, p. 19, that 51 per cent of the total value of all acquisitions between 1960-68 are accounted for by an exchange of shares. Cash plays a part in 82 per cent of all transactions.

to the selling shareholders than to float a public issue of shares to raise cash to pay them. Also Canadian tax law does not permit the deduction of debt interest from income when the borrowed funds are used to purchase the shares of other corporations. Thus if income does not generate enough cash for the acquisition the least expensive alternative is an exchange of shares. It is reasonable to assume that if a large part of the purchase price must be paid in shares, then a portion of retained earnings might be used for dividends to raise the share price so that a favorable share exchange ratio is realized.

For internal expansion a similar situation exists. Extreme leverage is uncommon among the firms in the sample. Therefore, internal investment must be largely financed by equity capital and retained earnings. Since internal growth generally proceeds at a slower rate, the cash demands are spread over a long period. If these demands can be met by retaining earnings over time then the flotation costs of a share issue to raise capital could be avoided. In this situation firms growing internally would pay less dividends.

A reconciliation of the different dividend growth rates between the two groups of firms can also be based on the nature of the data. Many of the actively combining firms entered 1957 as relatively small companies. It was apparent that many of these firms paid no dividends at all

until later when some degree of profitability was achieved. Consequently, when dividends were declared they increased rapidly. On the other hand, many of the non-merging corporations were established firms with a long history of dividend payments. Having an established dividend policy, it is unlikely that these firms would increase their payout at the same rate as the younger firms.

It was pointed out that mergers are sensitive to the stock markets appraisal. In order to acquire a firm at a low cost, the buyer must increase its share price. This will obtain a favorable exchange ratio. Evidence of this sensitivity can be seen among Canadian firms. Appendix D shows graphs of frequency of acquisition and stock price index plotted against time for the period 1957-68. By comparing the two graphs it is seen that periods of renewed acquisition activity follow periods of high stock prices by about one year.

Flexibility

Actively combining firms showed a significantly greater growth rate in equity capital over the period. In view of the earlier discussion of investor's valuation of the two types of firms, this is not surprising. Firms able to command a higher price-earnings ratio should attract more equity capital. This factor has a compounding effect on profitability. Profitability is related to the

ability of a firm to respond quickly to opportunities. This means that easy access to capital for financing helps acquisition which generates further earnings and attracts more investors. Furthermore, a strong equity base will aid the firm in securing debt whenever desired.

It was seen that an exchange of shares was preferred in most of the transactions. The new share issues would appear on the balance sheet of the acquiring firm as an addition to equity capital. Thus the higher growth rate in equity capital for merging firms could be due to two reasons. Either investors preferred to invest in combining firms, or equity issues were used extensively to consummate acquisitions. If merging firms wanted equity capital they had no difficulty obtaining it. In view of the evidence of the extensive use of shares to acquire other firms, this is a reasonable explanation for merging firms showing a greater growth rate in equity.

The liquidity of merging firms was also significantly greater over the period. This is evidenced by the t value for the current ratio. Two reasons for this result are apparent. First, liquidity adds flexibility to a firm's operations and this is more important in the case of acquisitions. So acquiring firms would endeavor to maintain higher liquid reserves than internal growth firms.

Second, cash is used in 82 per cent⁷ of all acquisitions to some extent. It is logical to assume that acquiring firms would exhibit a higher level of liquidity over the period in view of the extensive use of cash. Or else these firms found that acquisitions resulted in an increase in current assets which raised the liquidity of the combination above that of non-merging firms.

The results of this study are generally consistent with the established theory. And exceptions are usually the result of differences between the Canadian and U.S. business conditions. The results are summarized in the following chapter.

⁷Ibid.

CHAPTER VII

CONCLUSION

The objective of this study was to determine if actively combining corporations in Canada achieved greater profitability than firms expanding by internal growth.

In order to achieve this objective, a heuristic evaluation of the potential advantages of each mode of growth was conducted. Subsequently an empirical analysis was carried out. Acquisition and merger data was gathered for 233 firms listed on the Toronto Stock Exchange industrial classification for the period 1957-68. This information was used to classify the firms into merging and non-merging groups. A paired sample was then drawn on the basis of size and industry. A parametric t test was used to compare the performance of the two groups of firms over the period 1957-68 on the basis of profitability. The performance variables included a variety of ratios and growth rates to compare competitive strength, efficiency and flexibility. Rate of return was the overall measure of profitability. A number of stock market variables were also included to evaluate profitability from the shareholders point of view.

The theoretical evaluation showed that merging

and non-merging firms required different characteristics for profitable growth. Whereas combination required the two parties to possess complementary properties, internal growth was potentially profitable under a wider variety of circumstances. Also acquisition was found to possess an additional source of profitable investment opportunities when firms could be acquired at bargain prices.

The parametric test showed that there was no significant difference in the rates of return of firms pursuing either mode of growth. Merging firms were found to be more competitive in terms of increasing sales volume and cash flow. However, this advantage did not permeate to the profit level of the firm. Apparent inefficiencies were manifest at two levels within merging firms. First, the growth rate of operating income for merging firms was less pronounced relative to non-merging firms than the growth rate of sales. This implies that merging firms experienced increasing production costs as they expanded. Second, the growth rate of operating earnings per share showed the same degree of bias in favor of merging firms as did the growth rate of operating income. This was to be expected. But the growth rate of earnings per share after taxes was slightly biased in favor of the non-merging firms. Since income after tax is calculated by deducting administration and distribution expenses, this result implies that these expenses increased

for merging firms. This indicates inefficiencies at the administrative and selling level. Both types of corporations were found to utilize capital with the same effectiveness and no systematic difference in capital structure was discernible.

Comparison of stock market variables illuminated the investors' evaluation of merging and non-merging firms. The theory that investors value the earnings of acquisition minded companies at lower discount rates was verified as one of the most important results of the study. Also the fact that acquiring firms can raise earnings per share through manipulation of the price-earnings ratio was denied by the comparison of earnings per share after taxes. Dividends per share increased at a greater rate over the period for merging firms. Several explanations based on stability of earnings, diversification and a relaxation of growth pressures were advanced, but the most likely explanation was found in the nature of the data used in the study. The finding that the growth rate in common equity was significantly greater for merging firms was mainly due to the fact that exchanges of common shares are the most common transaction medium in acquisitions. Since shares issued by the acquiring company for shares of the seller are added to the equity account on the balance sheet, the amount of equity capital increases

with each acquisition. The current ratio for merging firms was greater indicating a higher average level of liquidity for these firms. This was rationalized on the basis of the amount of cash used in acquisition transactions. Even though share exchanges are the dominant medium of payment it was pointed out that some cash was used in conjunction with shares in the majority of transactions. The fact that acquiring firms retain a certain amount of cash for this reason could account for their higher level of liquidity over the period.

The finding that investors discount the earnings of acquiring firms at lower rates can affect the price which a firm can afford to pay for an acquisition. If mergers are evaluated in the capital budgeting framework, then a particular acquisition is desirable only if the rate of return on the purchase price is greater than the cost of capital. Since the combined earnings of both firms will be discounted at a lower rate after acquisition the buyer can purchase a firm having a return lower than its cost of capital and still realize a net increase in share price after acquisition. Alternatively, the buyer can pay a higher price for a given earnings stream and still realize an increase in share price.

In order to induce shareholders to sell, the acquiring firm must offer a price in excess of the intrinsic or market value of the shares. The fact that investors

will increase the price-earnings ratio of the combined entity allows the buyer to pay the higher price and still realize a net increase in share price. This effect probably accounts for the premiums currently being paid for acquisitions and mergers.

In conclusion a firm willing to devote much attention to planning growth strategy should be able to derive greater benefits from external growth than are manifest by the cross section of firms in this study.

APPENDIX A

REASONS FOR COMBINING

Financial¹

1. To exploit an opportunity.
2. To avoid the risk of internal development programs.
3. Use idle cash.
4. Take advantage of a tax loss.
5. Increase market value of stock.
6. Effect more rapid growth.
7. Improve profit level or trend in present business.
8. Secure a source of capital.
9. Spread business risk.
10. Provide a market for stock.

Operating

1. Improve on volume level or trend in current business.
2. Offset seasonal or cyclical fluctuations in firm's present line.
3. Satisfy customer demand for additional services or items.
4. Reduce dependence on single product.
5. Broaden customer base.
6. Obtain business in new territory.
7. Acquire new customers and new markets.
8. Take advantage of an existing reputation.

¹Arthur D. Little Inc., Mergers and Acquisitions: Planning and Action, Report Prepared for the Financial Executives Research Foundation (London: Routledge and Kegan Paul, 1965), p. 40.

9. Obscure the details of the primary area of activity from competitors through diversification and the publication of consolidated financial statements.
10. Obtain R & D group.
11. Strengthen the management.
12. Acquire particular products.
13. Increase utilization of present resources.
14. Enhance power and prestige of the owner, president or management of the company.
15. Provide an outlet for frustrated interests or excess management capacity.
16. Add glamour and greater interest to the company.

Other authors have condensed similar reasons into broader motives such as:

1. Diversify,
2. Stabilize seasonal fluctuations,
3. Extend vertical integration,
4. Promote growth,
5. Check declining margins,
6. Utilize effort more effectively,
7. Salvage a tax loss.²

²Wyatt and Kieso, Business Combinations, p. 18.

APPENDIX B

SHARE VALUATION MODEL

SHARE VALUATION MODEL

The share valuation approach is similar for evaluating internal investment and acquisitions. The criterion for profitable investments is that the wealth of the current shareholders is increased or that the value of the shares is greater with the investment than without it. The impact of the investment on the price of the shares depends upon the effect on earnings and on the discount rate. Both of these effects will be considered.

The Effect of Earnings on Share Value

Consider a firm B expanding by internal investment. Two earnings streams must be distinguished with respect to a new investment. The first is the stream of expected incremental earnings due to the new investment denoted by,

$$\Delta E_1, \Delta E_2, \dots \Delta E_n$$

in each period. The second stream is the expected earnings accruing to the holders of the presently outstanding shares before investment,

$$E_1(n_B), E_2(n_B), \dots E_n(n_B).$$

The $E_n(n_B)$ stream discounted at the cost of capital yields

the present share price p_B . After investment the discounted $E_n(n_B)$ stream will yield a share price of $p_B + \Delta p_B$. Only if S portion of the E_n Stream is added to the $E(n_B)$ stream will the share price rise or,

$$p_B + \Delta p_B > p_B.$$

For internal growth the cost of the investment, I , determines whether any of the incremental earnings accrue to the original shareholders. This is because I determines the number of new shares Δn_B that must be issued to finance the investment. If the internal rate of return on I is i , then

$$I = p_B \times \Delta n_B = \frac{\Delta E_1}{(1+i)} + \frac{\Delta E_2}{(1+i)^2} + \dots + \frac{\Delta E_n}{(1+i)^n}.$$

If i is greater than the cost of capital k , a portion of the incremental earnings will accrue to the original shareholders earnings stream and the share price will rise.

$$\text{If } i > k, \quad p_B + \Delta p_B > p_B.$$

This can also be illustrated by discounting the incremental earnings at the cost of capital k as follows,

$$V = \frac{\Delta E_1}{(1+k)} + \frac{\Delta E_2}{(1+k)^2} + \dots + \frac{\Delta E_n}{(1+k)^n}.$$

Then if $V > I$, $p_B + \Delta p_B > p_B$.

Thus the profitability of any investment depends upon the internal rate of return relative to the cost of capital, or on the present value of the investment relative to its cost.

For external growth the situation is exactly analogous to that presented above. If the selling firm S has n_s shares outstanding and a market price of p_s then the cost of the investment is

$$p_s \times n_s = p_B \times \Delta n_B.$$

The same conclusions apply.

If $i > k$, or if $V > n_s \times p_s$, $p_B + \Delta p_B > p_B$.

Whether the present shareholders are better off with the acquisition depends upon i relative to k and whether the present value of the acquisition V , is greater or less than the cost, $p_s \times n_s$.

The Effect of the Cost of Capital on Share Valuation

The previous section showed that to increase the $E(n_B)$ stream an internal investment or merger must generate an internal rate of return that exceeds the cost of capital. This section points out how the share price may be raised by influences on the cost of capital.

The more uncertain investors are about B's periodic earnings, the greater the compensation over and above the pure interest rate they require. Therefore an investment might have no effect on the $E(n_B)$ stream but it could convince investors that B's future is now less uncertain than it was. This would lead investors to reduce the discount rate and as a result the share price would rise.

If an investment generates an internal rate of

return that is equal to B's previous cost of capital k , and if at the same time the investment reduces the discount rate from k to k_1 , then $p_B + \Delta p_B > p_B$. Actually an investment that reduces k to k_1 need only generate an internal rate of return that is greater than B's marginal cost of capital k_2 , for $p_B + \Delta p_B > p_B$, where k_2 is less than k_1 . Thus an investment can in some cases actually decrease the $E(n_B)$ stream and raise p_B providing the discount rate k is reduced proportionately more than $E(n_B)$.

APPENDIX C

TORONTO STOCK EXCHANGE INDUSTRIAL
FIRMS SURVEYED

Beverages

Brights T. G. & Co. Ltd.
Canadian Breweries Ltd.
Chateau-Gai Wines Ltd.
Corby Distilleries Limited
Crush International Limited
Distillers Corporation - Seagrams Limited
Labatt, John Ltd.
Molson Industries Limited
Walker-Gooderham & Worts Ltd., Hiram

Chemicals

Canadian Industries Limited
Canadian Refractories Limited
Chemcell Limited
Dupont of Canada Ltd.
Hand Chemical Industries Ltd.
Jefferson Lake Petrochemicals of Can. Ltd.
National Drug & Chemical Co. of Can. Ltd.
Reichhold Chemicals (Canada) Limited
Union Carbide Canada Limited

Communication

Maclean-Hunter Limited
Selkirk Holdings Ltd.
Standard Broadcasting Corporation Limited
Thomson Newspapers Limited
Western Broadcasting Limited

Construction & Material

Beaver Lumber Company Limited
Bridge & Tank Co. of Canada Ltd.
Canada Cement Co. Ltd.
CDRH Limited
Canadian Foundation Company Limited
Canadian Vickers Limited
Dominion Bridge Co. Ltd.
Industrial Wire & Cable Co. Ltd.
Lafarge Cement of North America Ltd. (1968)
Lake Ontario Cement Ltd.
Milton Brick Co. Ltd.

Construction & Material continued:

National Containers Ltd.
 Ocean Cement & Supplies Ltd.
 Phillips Cables Limited
 Revelstoke Building Materials Ltd.
 St. Lawrence Cement Co.
 Standard Paving and Materials Ltd.

Food Processing

Atlantic Sugar Refineries Co. Limited
 B.C. Sugar Refinery Ltd.
 Burns Foods Limited
 Canada & Dominion Sugar Co. Ltd.
 Canada Bread Company Limited
 Canada Malting Company Limited
 Canada Packers Limited
 Canadian Cannery Ltd.
 Canadian Food Products Limited
 Canadian Salt Company Limited, The
 Dominion Dairies Ltd.
 Dover Industries Ltd.
 Federal Grain Limited
 General Bakeries Limited
 Laura Secord Canada Shops Limited
 Maple Leaf Mills Ltd.
 McCabe Grain Company Limited
 Ogilvie Flour Mills Company Limited
 Salada Foods Limited
 Silverwood Dairies Limited
 Stafford Foods Limited
 Weston Ltd., Geo.

Auto Industry

Acklands Limited
 Auto Electric Service Co. Ltd.
 Ford Motor Co. of Canada Ltd.
 Fruehauf Trailer Co. of Canada Ltd.
 Hayes-Dana Limited
 Kelsey-Hayes Canada Limited
 Levy Industries Ltd.

Electronics

CAE Industries Limited
Canadian General Electric Co. Ltd.
Canadian Marconi Co.
Canadian Westinghouse Company Limited
Clairtone Sound Corp. Ltd.
Electrohome Limited
Fleet Manufacturing Ltd.
FPE-Pioneer Electric Ltd.
Magna Electronics Corp. Ltd.
Morse Corporation Limited, Robert
Zenith Electric Supply Ltd.

General Manufacturing

Anthes-Imperial Limited
Beatty Brothers Limited
Bowes Co. Ltd.
Canadian British Aluminum Co. Ltd.
Consumers Glass Company Limited
Eddy Match Co. Ltd.
Exquisite Form Brassiere (Canada) Ltd.
Fleetwood Corporation
General Products Mfg. Corp. Ltd.
General Steel Wares Ltd.
Goodyear T & R of Can. Ltd.
Inglis, John, Co. Ltd.
I.T.L. Industries Limited
Montex Apparel Industries Limited
Ontario Steel Products Co. Ltd.
Versatile Manufacturing Ltd.
Vulcan Containers (Canada) Ltd.

Holding Co.

Consolidated Textile Mills Limited

Industrial Mines

Alcan Aluminum Limited
Asbestos Corporation Limited
Cominco Limited
Falconbridge Nickel Mines Ltd.
International Nickel Company of Canada Ltd.
Noranda Mines Limited

Merchandising

Ashdown, J. H. Hardware Co. Ltd.
Canadian Tire Corporation Limited
Courvette & Provost Ltee.
Dominion Stores Ltd.
Gordon MacKay & Stores Ltd.
Kelly Douglas & Company Ltd.
Loblaw Companies
Loeb, M. Limited
Maher Shoes Limited
Metropolitan Stores of Canada Ltd.
Oshawa Wholesale Limited
Peoples Credit Jewellers Ltd.
Reitman's (Canada) Ltd.
Simpsons Limited
Simpsons Sears Ltd.
Sobeys Stores Limited
Steinberg's Ltd.
Tamblyn Limited, G.
Westfair Foods Ltd.
Woodward Stores Limited
Zeller's Limited

Paper & Forest Products

Abitibi Paper Co. Ltd.
Anglo-Canadian Pulp & Paper Mills Ltd.
British Columbia Forest Prod. Ltd.
Columbia Cellulose Company Ltd.
Consolidated Paper Limited
Crestbrook Forest Industries Limited
Crows Nest Industries Ltd.
Domtar Limited
Fraser Companies Ltd.
MacMillan Bloedel Limited
Price Company Limited (The)
Rolland Paper Company Limited
Scott Paper Limited

Pipeline

Alberta Gas Tr. Line Co. Ltd.
Alberta Natural Gas Company

Pipeline continued:

Interprovincial Pipe Line Company
 Pembina Pipe Line Ltd.
 Trans-Canada Pipe Lines Ltd.
 Trans-Mountain Oil Pipe Line Co.
 Trans-Prairie Pipelines Ltd.
 Westcoast Transmission Co. Limited

Steel

Algoma Steel Corporation Ltd.
 Dominion Foundries & Steel Ltd.
 Dominion Steel & Coal Corp. Ltd.
 Interprov. Steel & Pipe Corp. Ltd.
 Russel (Hugh) & Sons Limited
 Steel Company of Canada Limited
 Westeel-Rosco Ltd.

Textiles

Bruck Mills, Ltd.
 Dominion Textile Co. Ltd.
 Hamilton Cotton Co. Ltd.
 Harding Carpets Limited
 Scott-Lasalle Limited

Transportation

Algoma Central Railway
 Canada Steamship Lines Ltd.
 Greyhound Lines of Canada Limited
 Overland Express Limited
 White Pass & Yukon Corporation Limited

Utility

Bell Telephone Company of Canada
 British Columbia Telephone Co.
 Calgary Power Ltd.
 Canadian Hydocarbons Limited
 Canadian Utilities Ltd.
 Consumers' Gas Company, The
 Great Lakes Power Corporation Ltd.
 Inland Natural Gas Co. Ltd.

Utility continued:

Inter-City Gas Ltd.
Maritime Telegraph & Telephone Co. Ltd.
New Brunswick Telephone Co. Ltd.
Northern & Central Gas Corporation Ltd.
Nova Scotia Light & Power Company
Union Gas Company of Canada Limited

Miscellaneous

British American Bank Note Co. Ltd.
Combined Engineered Products Limited
Computel Systems Limited
Computing Devices of Canada Limited
Cosmos Imperial Mills Ltd.
Crain Limited, R. L.
Denault Limitee
Dominion Glass Company Ltd.
Emco Ltd.
Fittings Ltd.
Hawker Siddeley Canada Limited
Imperial Tobacco Co. of Can. Ltd.
Jockey Club Ltd., The
Massey-Ferguson Ltd.
Melchers Distilleries Limited
MLW-Worthington Limited
Moore Corporation Ltd.
Niagara Wire Weaving Co. Ltd.
Okanagan Helicopters Limited
Photo Engravers & Electrotypers Ltd.
Rapid Grip & Batten Ltd.
Ronalds-Federated Ltd.
Rothmans of Pall Mall Canada Ltd.
Slater Steel Industries Ltd.
Versafood Services Limited

APPENDIX D

NUMBER OF ACQUISITIONS BY YEAR FOR THE

INDUSTRIAL FIRMS SURVEYED

AND

THE INDUSTRIAL STOCK PRICE INDEX

FOR THE PERIOD 1957-68

IN CONSTANT DOLLARS*

*Dominion Bureau of Statistics, Prices and Price Indexes (Ottawa: The Queen's Printer, 1957-68) Catalog No. 62-002.

CHART I

NUMBER OF ACQUISITIONS BY THE SAMPLE OF INDUSTRIAL

FIRMS FOR THE PERIOD 1957-68.

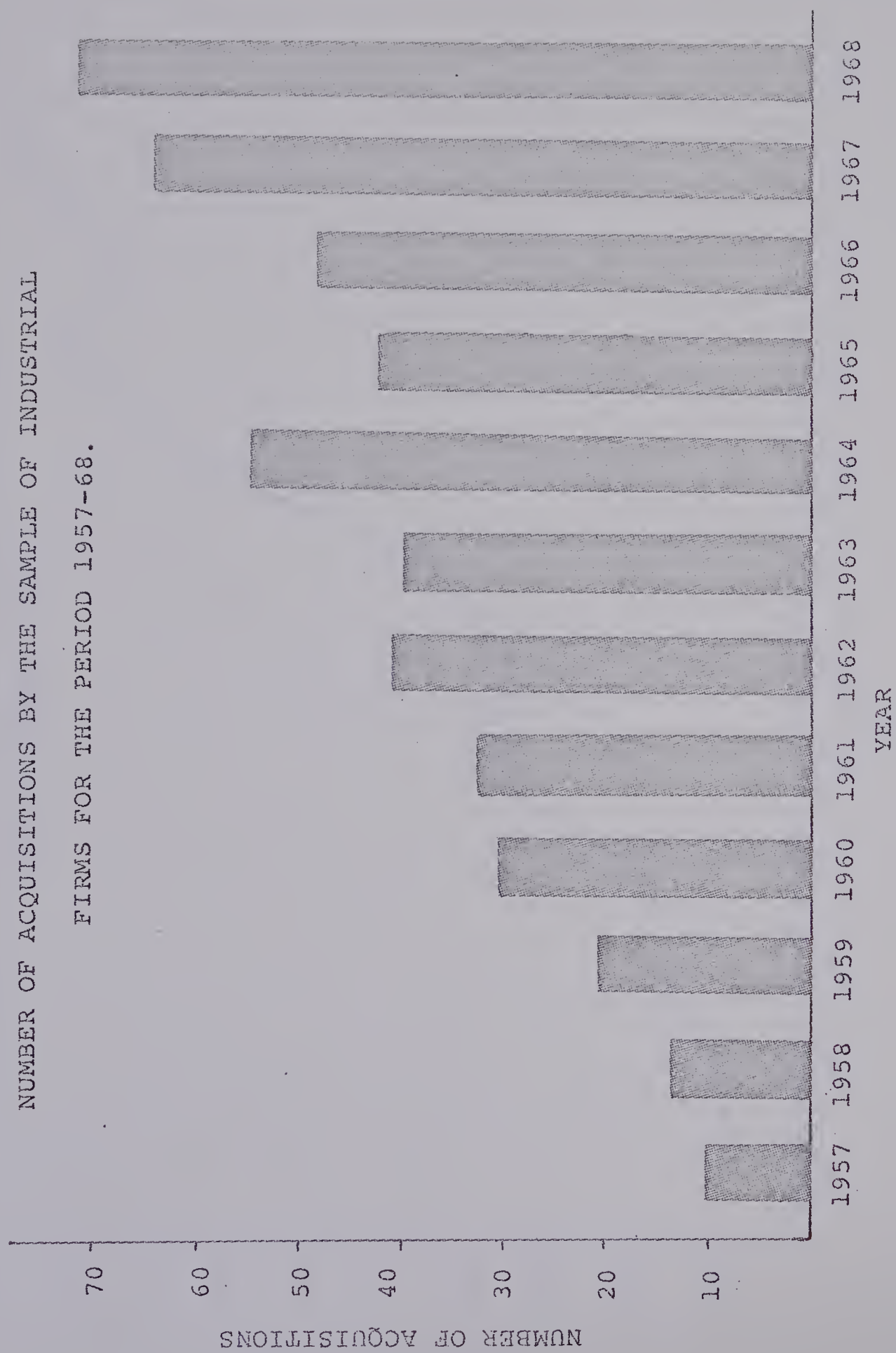
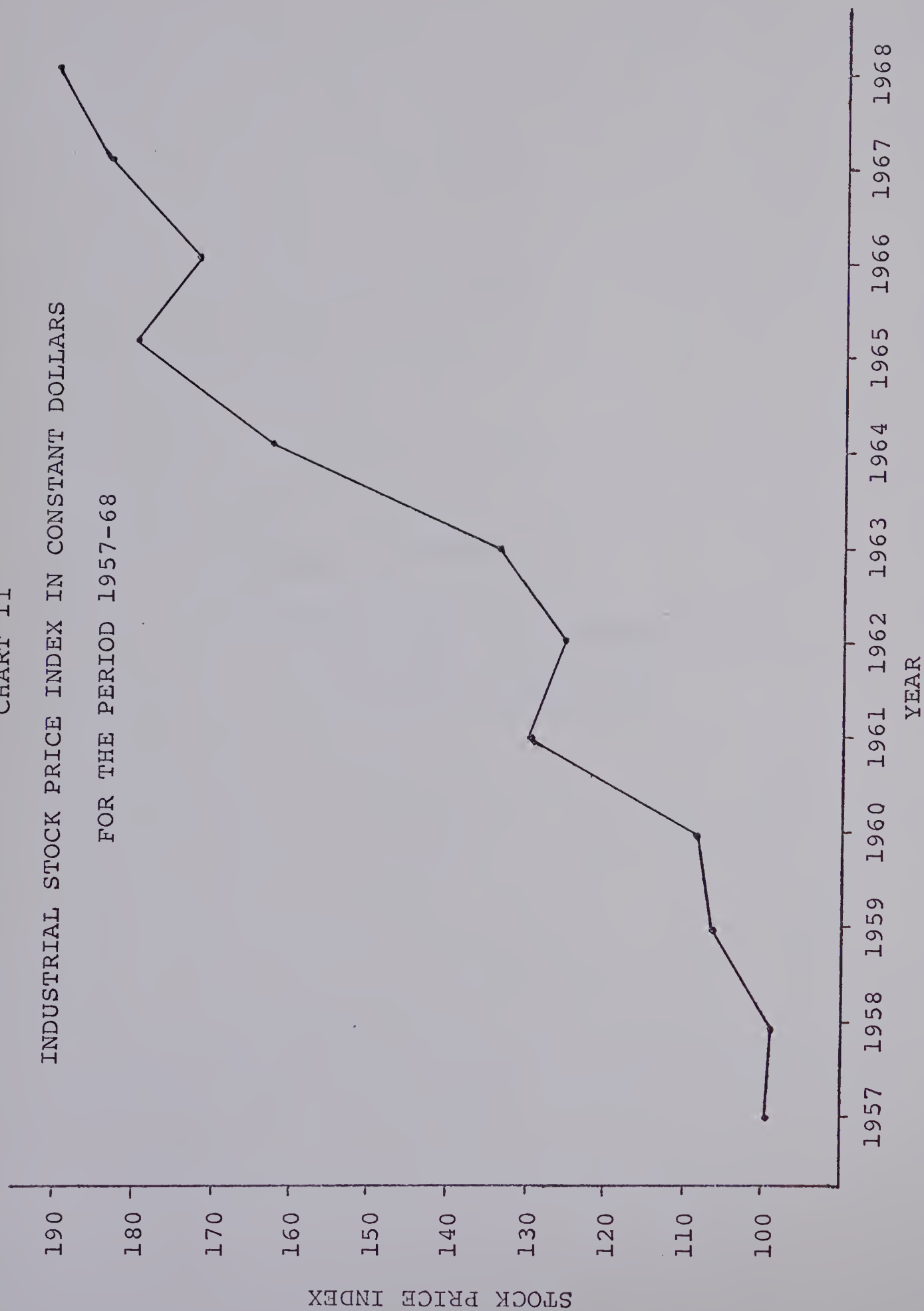


CHART II
INDUSTRIAL STOCK PRICE INDEX IN CONSTANT DOLLARS
FOR THE PERIOD 1957-68



APPENDIX E

CHI-SQUARE TEST OF GOODNESS OF FIT
TO NORMAL DISTRIBUTION

Variable	Probability of a Chi-Square occurring greater than that observed. ¹
Return on equity	.9302
Return on assets	.1562
Profit margin	.0346
Capital turnover	.8748
Growth rate of capital turnover	.3672
Debt-equity ratio	.2315
Growth rate of sales	.9089
Growth rate of operating income	.3862
Growth rate of cash flow	.5218
Growth rate of share price	.4501
Growth rate of earnings per share (before tax)	.2389
Growth rate of earnings per share (after tax)	.1708
Growth rate of dividends per share	.0907
Growth rate of equity capital	.3115
Current ratio	.0538
Price-earnings ratio	.3862

¹Test was performed using Chi-Square Goodness of Fit-Normality, NONP06 program of the Division of Educational Research Services, University of Alberta.

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